



# Hart & Nieren

# Siamese tweeling?

Björn Meijers, MD, PhD | UNIVERSITY HOSPITALS LEUVEN



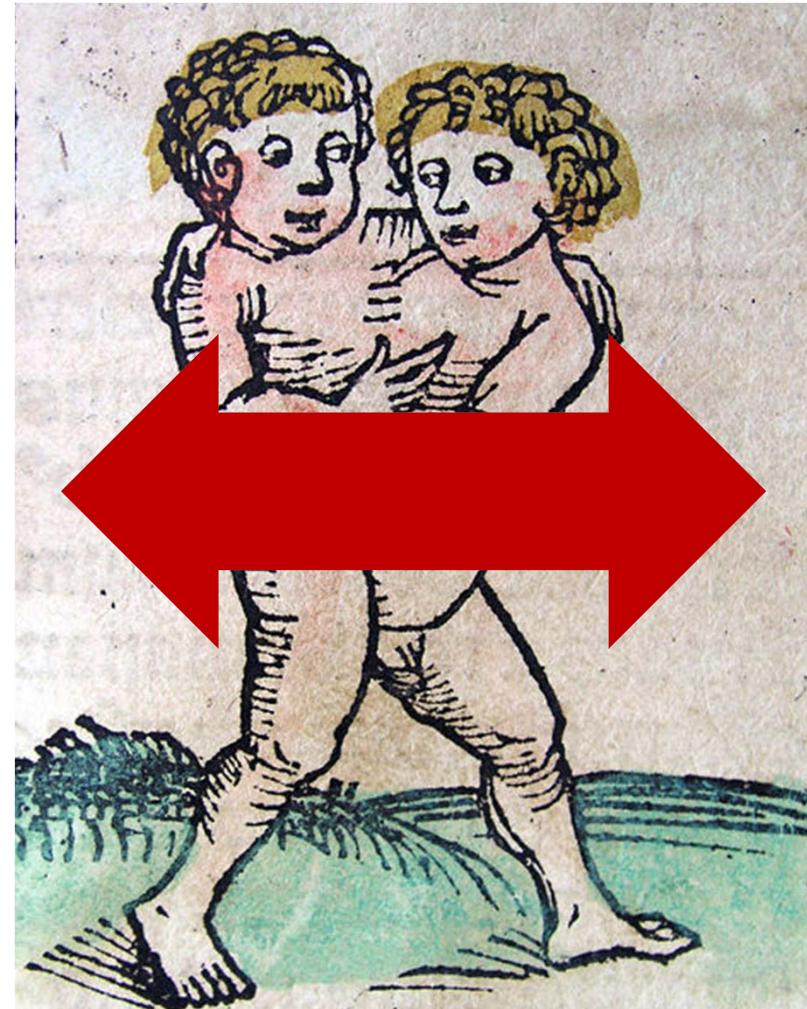




# Hart en nieren: onafscheidelijk

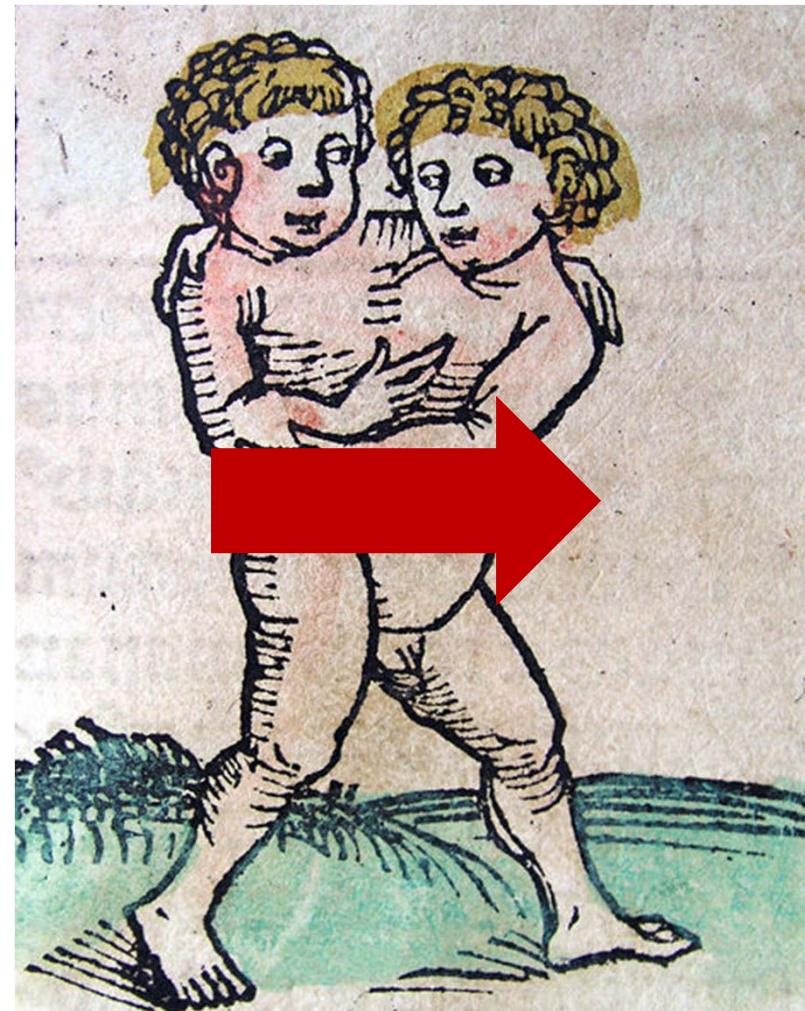
**CKD**

**CVD**



# Hart en nieren: onafscheidelijk

**CKD**



**CVD**

# CASUS 1

- Man, 37 jaar
- Glomerulonefritis, start hemodialyse
- Fataal hartinfarct op 49-jarige leeftijd
- Post-mortem:  
Ernstige en diffuse cardiovasculaire calcificaties

CASUS 1

The New England  
Journal of Medicine

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Volume 290

MARCH 28, 1974

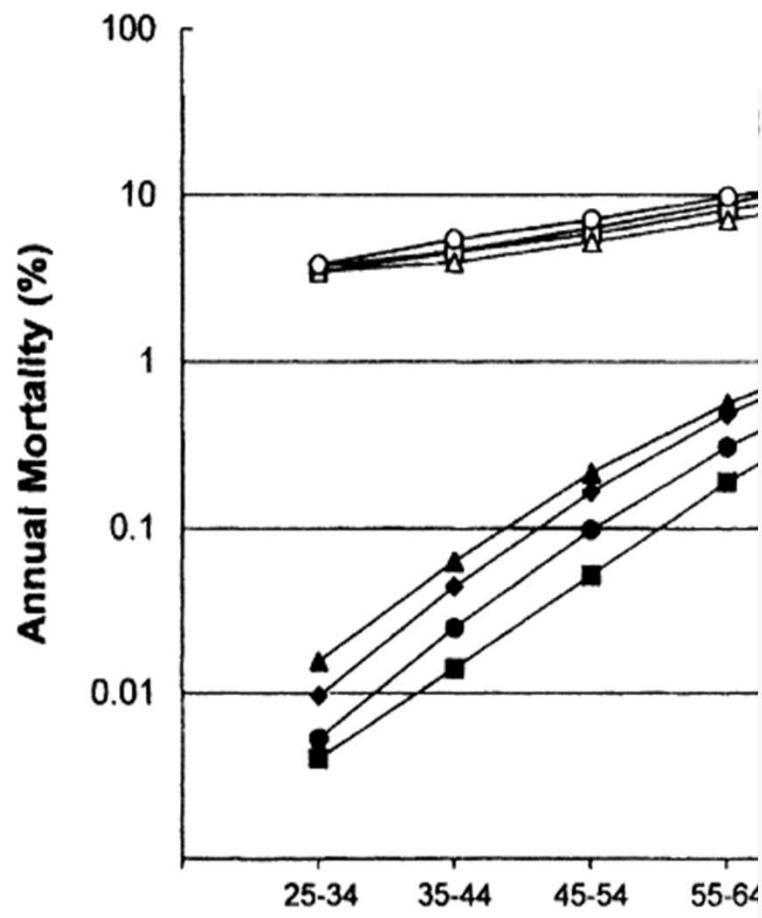
Number 13

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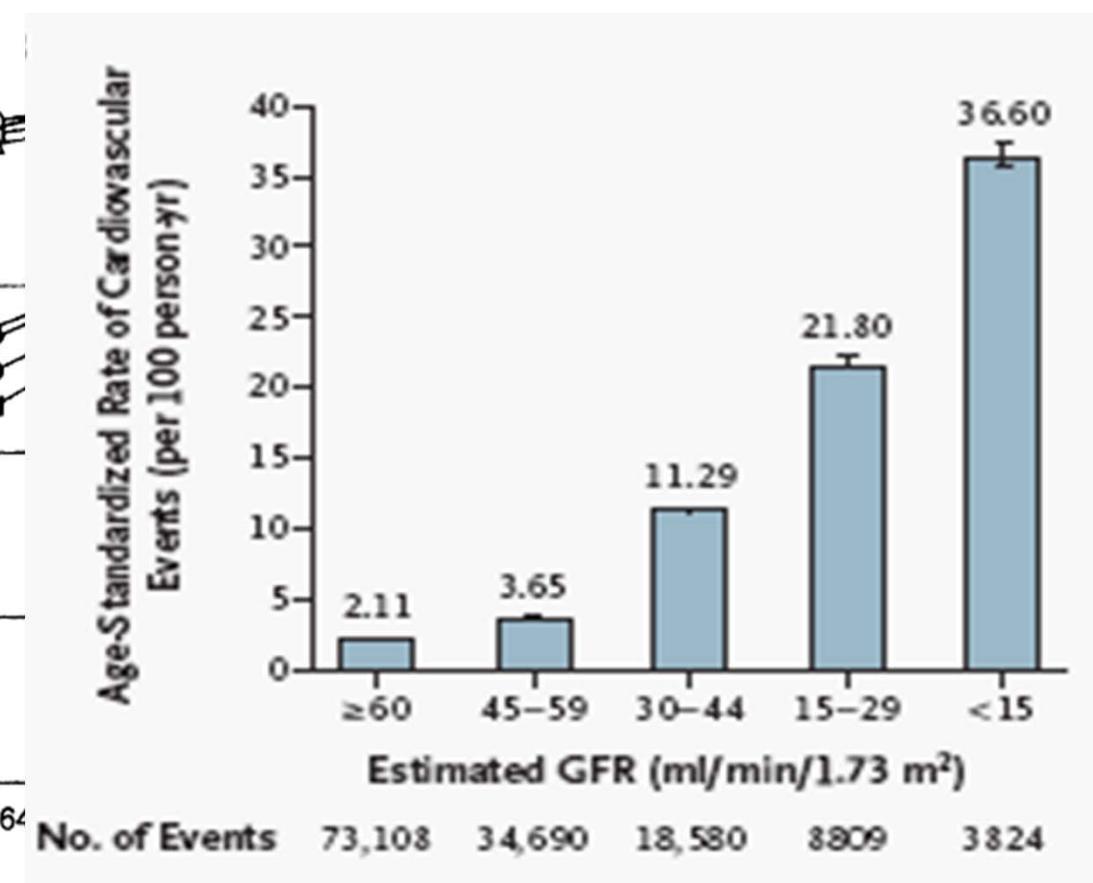
ACCELERATED ATHEROSCLEROSIS IN PROLONGED MAINTENANCE HEMODIALYSIS

ARMANDO LINDNER, M.D., BERNARD CHARRA, M.D., DONALD J. SHERRARD, M.D., AND  
BELDING H. SCRIBNER, M.D.

# Nierziekte voorspelt hartziekte

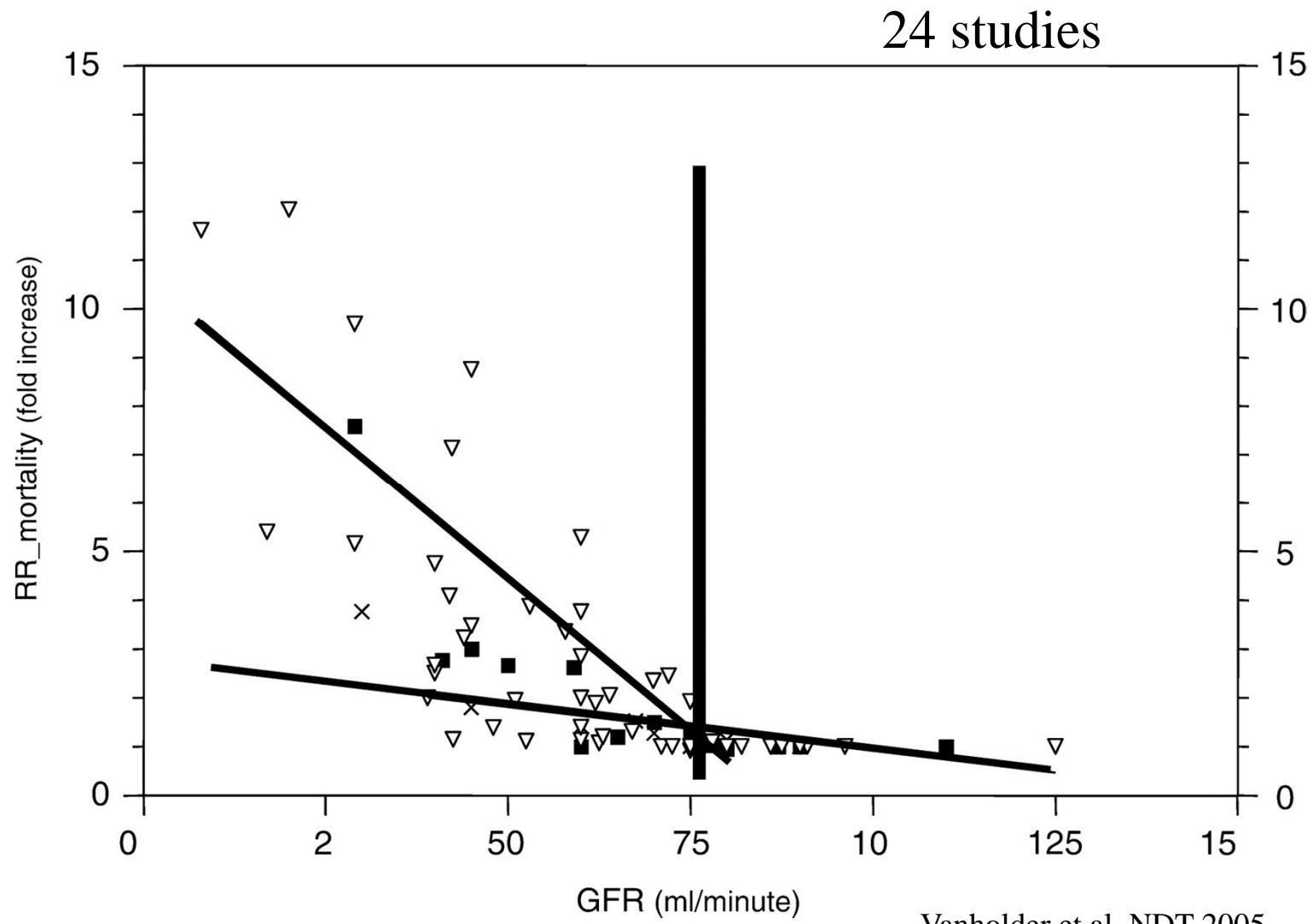


Foley et al. AJKD 1998



Go et al. NEJM 2004

# Nierziekte voorspelt hartziekte

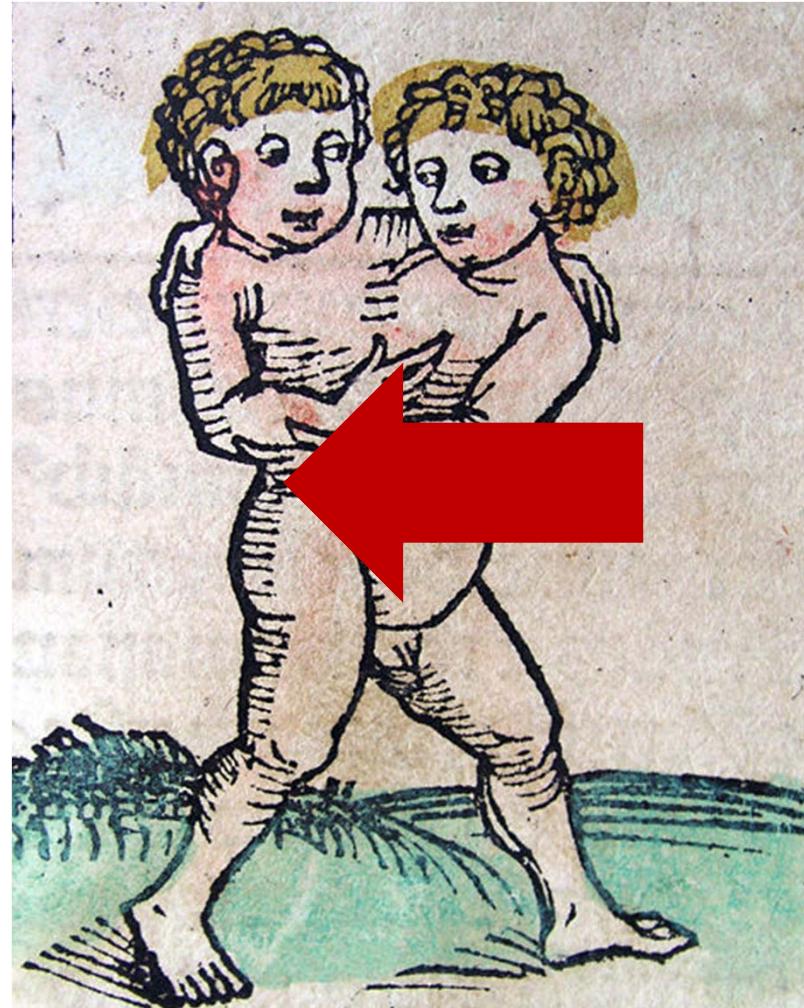


Vanholder et al. NDT 2005

## Hart en nieren: onafscheidelijk (2)

**CKD**

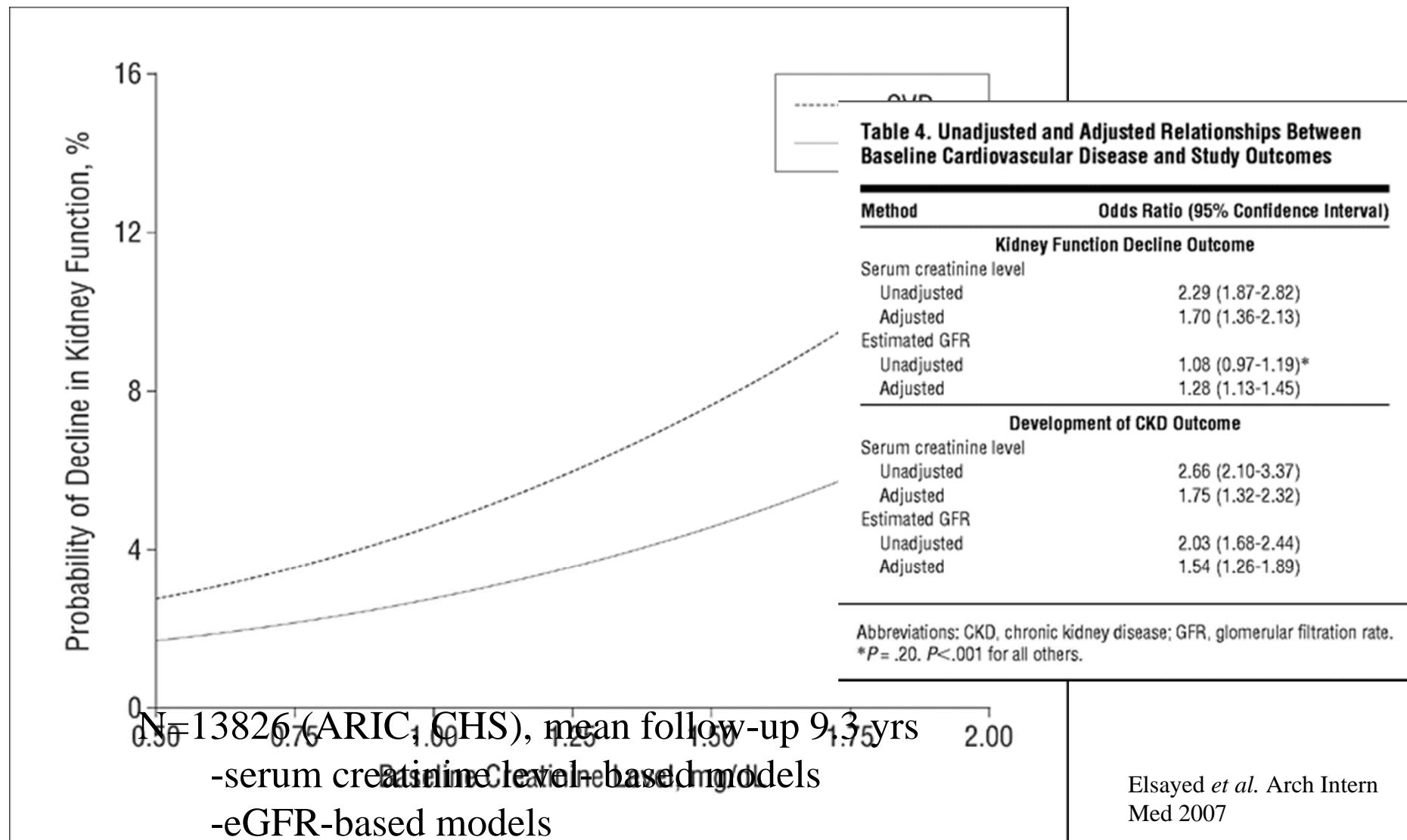
**CVD**



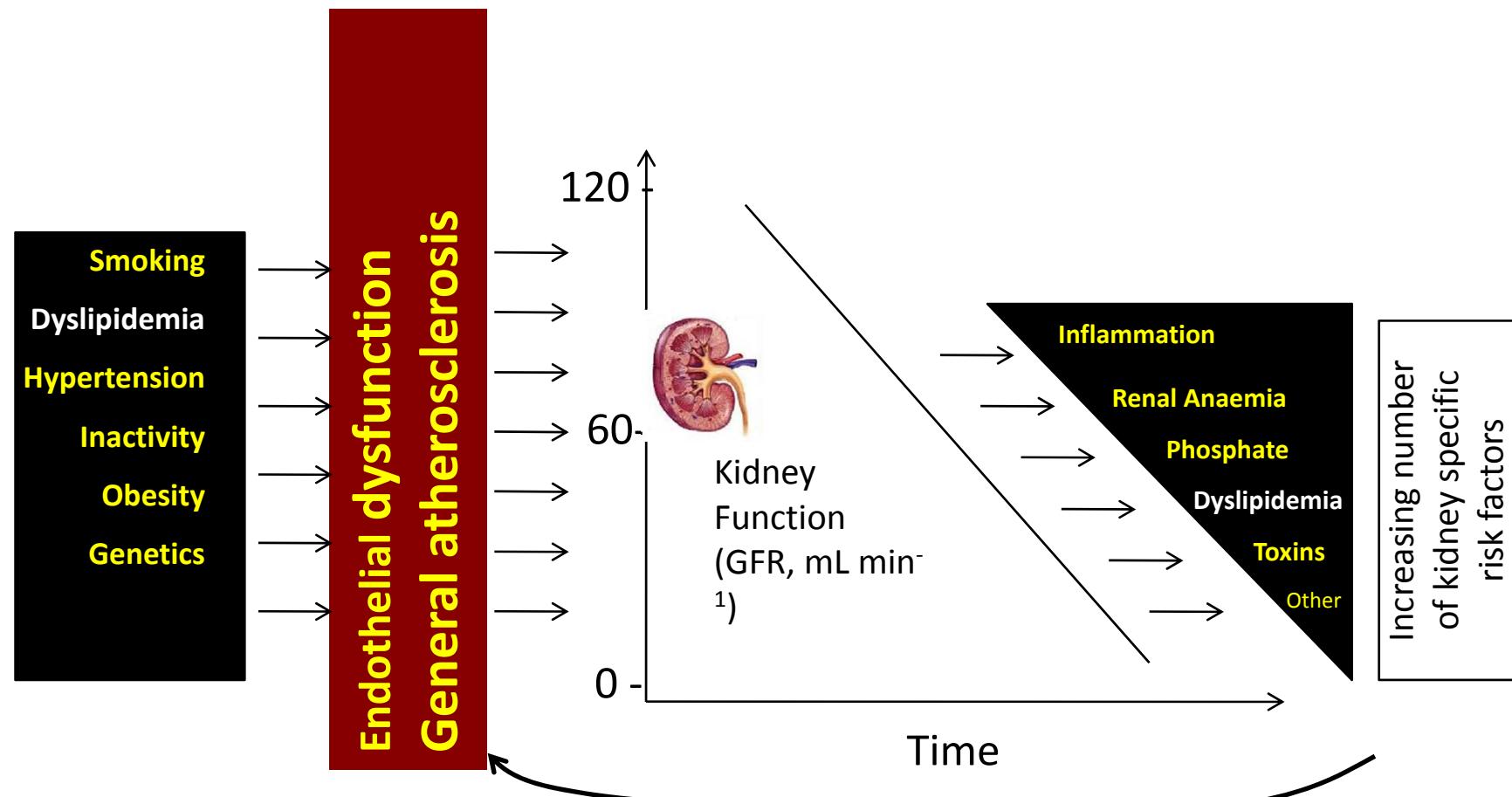
## CASUS 2

- Man, hypertensie
- Niet-fataal hartinfarct op 56-jarige leeftijd
- CABG, post-operatief tijdelijk dialyse
- Nadien chronische nierinsufficiëntie

# Hartziekte als voorspeller van nierziekte



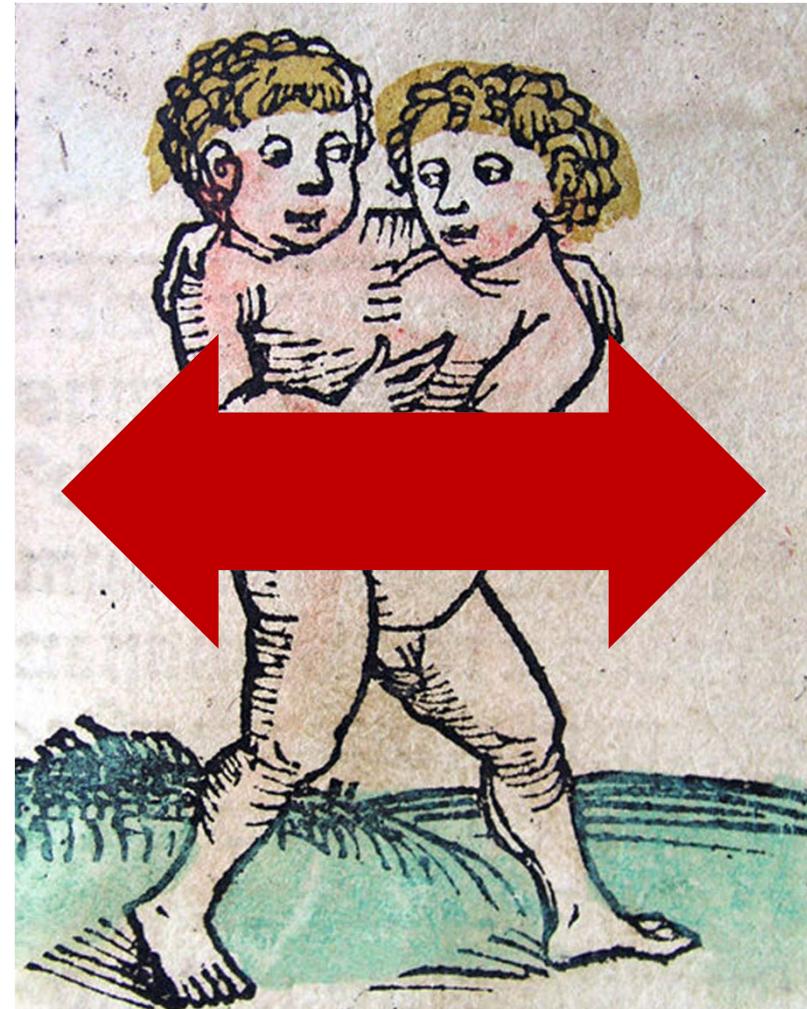
# Interactie risicofactoren



# Hart en nieren: onafscheidelijk

**CKD**

**CVD**



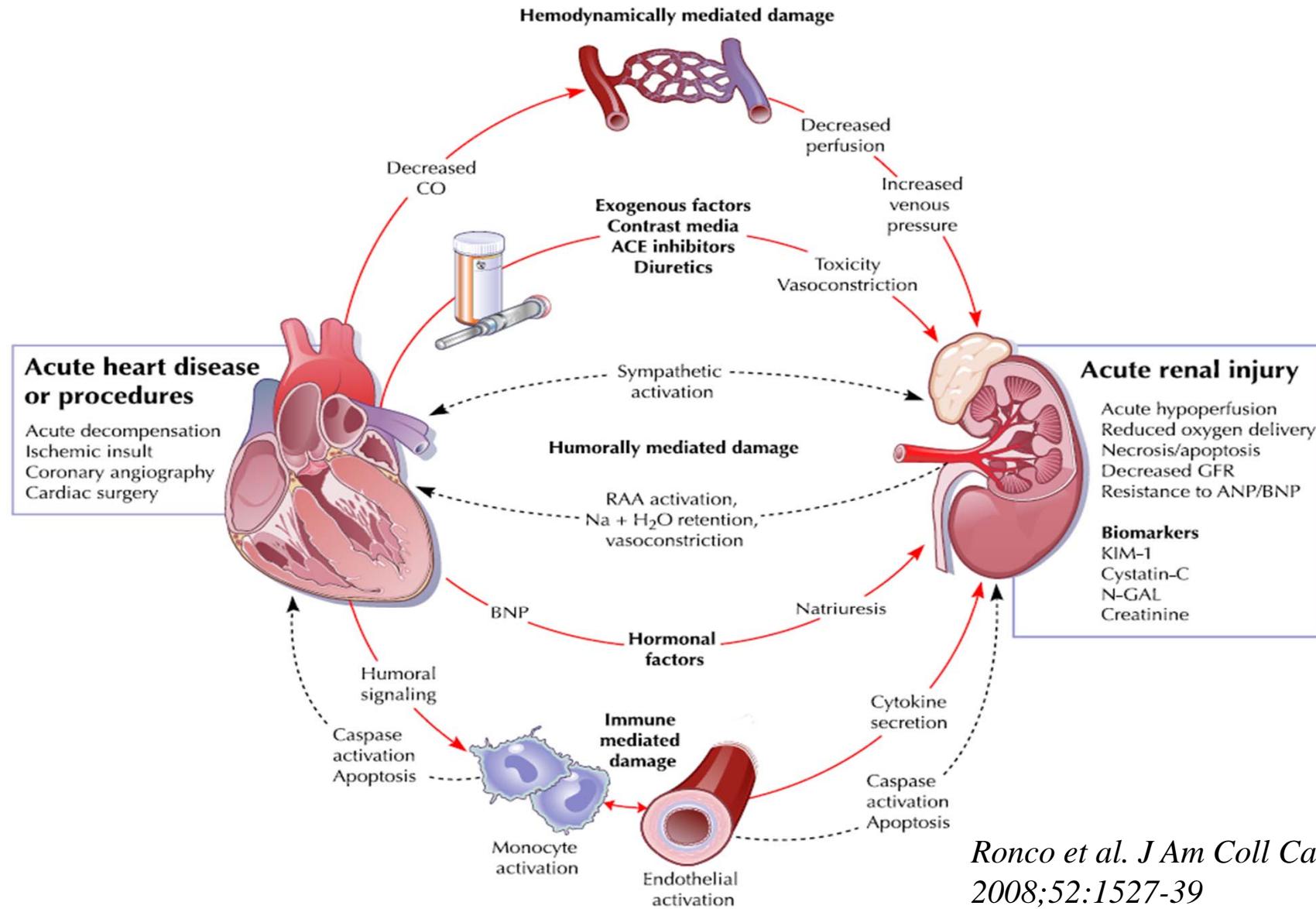
## Cardiorenal Syndrome

Claudio Ronco, MD,\* Mikko Haapio, MD,† Andrew A. House, MSc, MD,‡ Nagesh Anavekar, MD,§  
Rinaldo Bellomo, MD¶

Vicenza, Italy; Helsinki, Finland; London, Ontario, Canada; and Melbourne, Australia

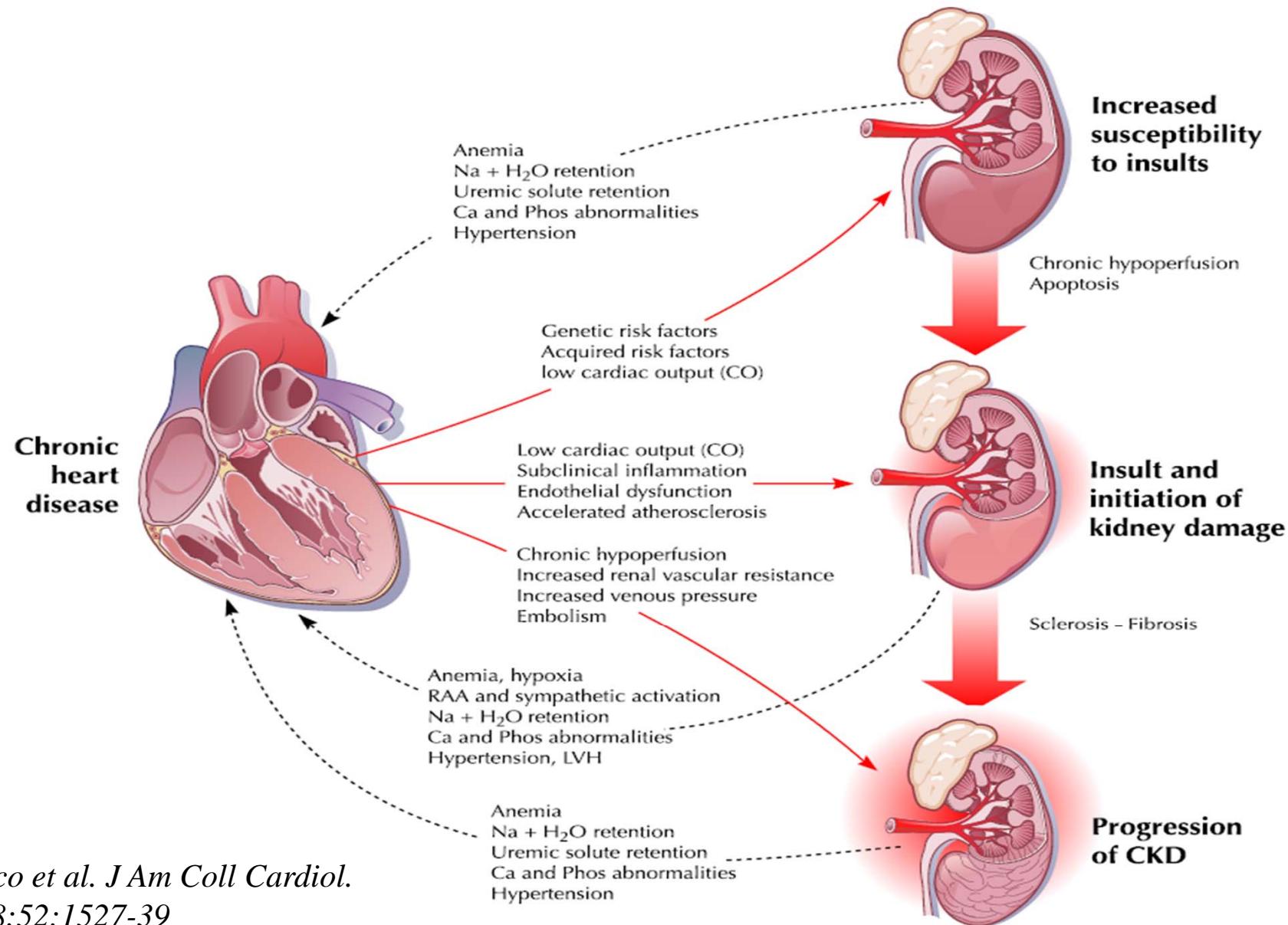
Primary Onset	Heart failure	Kidney failure	Combined
Acute	CRS type 1	CRS type 3	CRS type 5
Chronic	CRS type 2	CRS type 4	

# Cardiorenaal syndroom type I

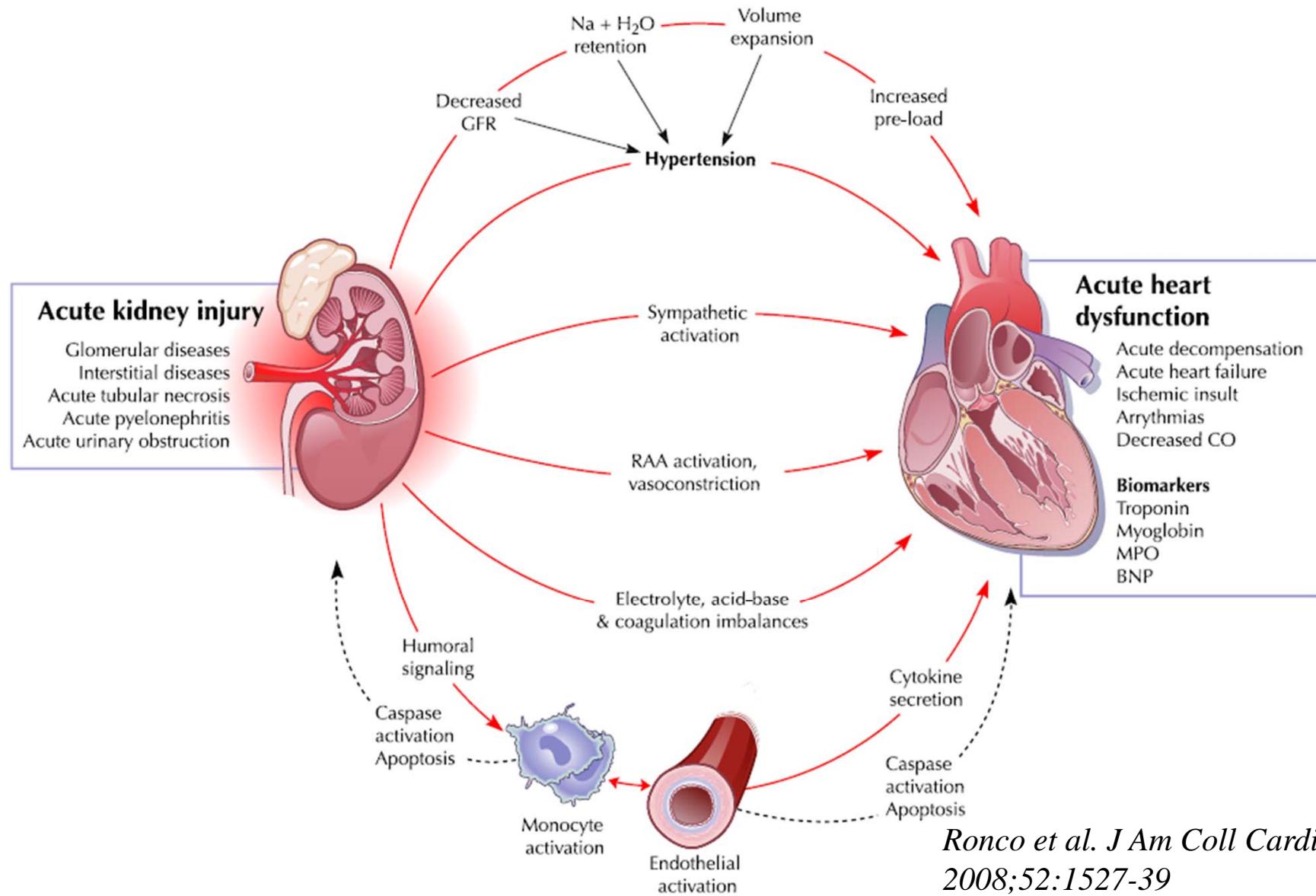


Ronco et al. J Am Coll Cardiol.  
2008;52:1527-39

# Cardiorenal syndroom type II

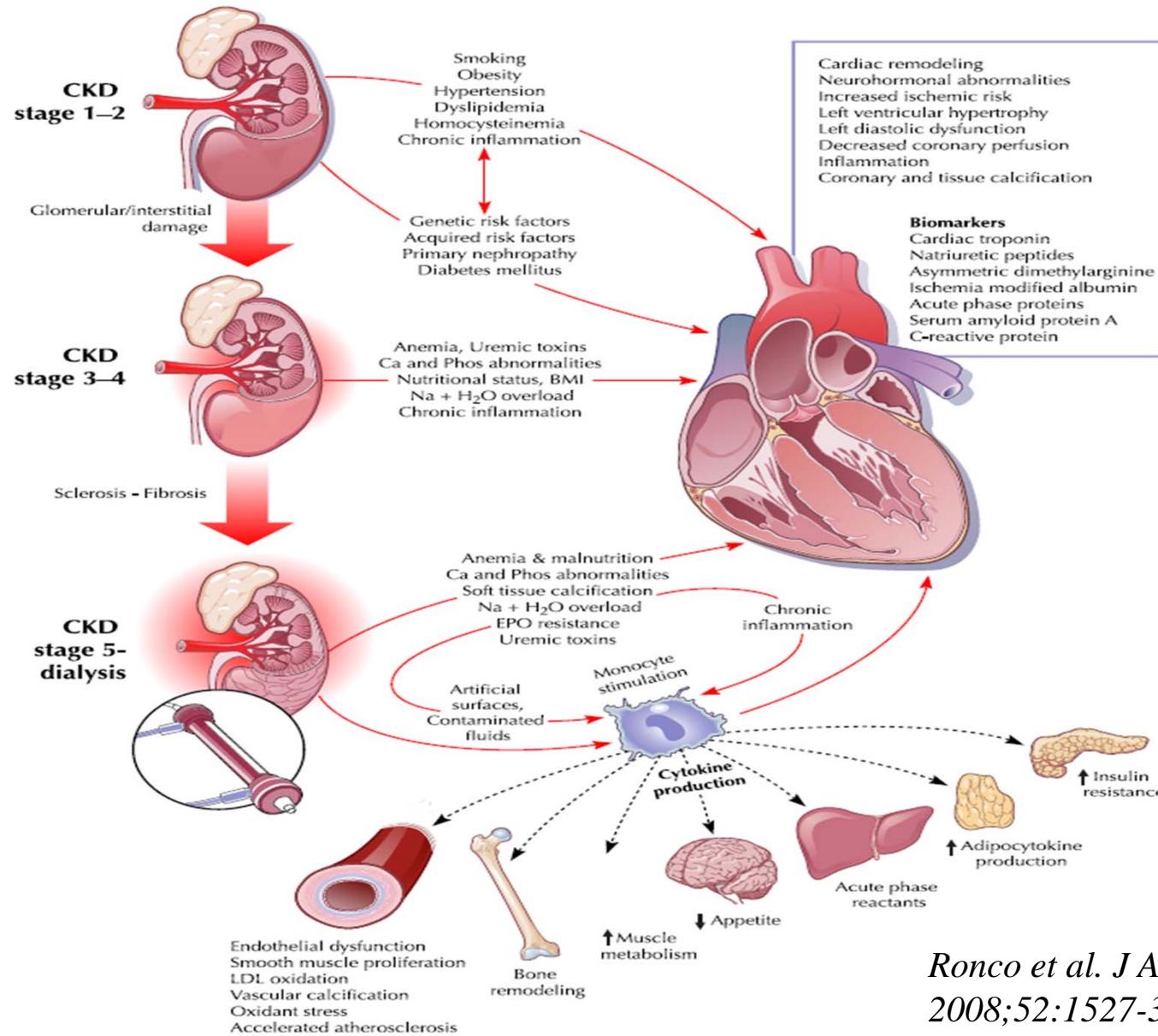


# Cardiorenaal syndroom type III



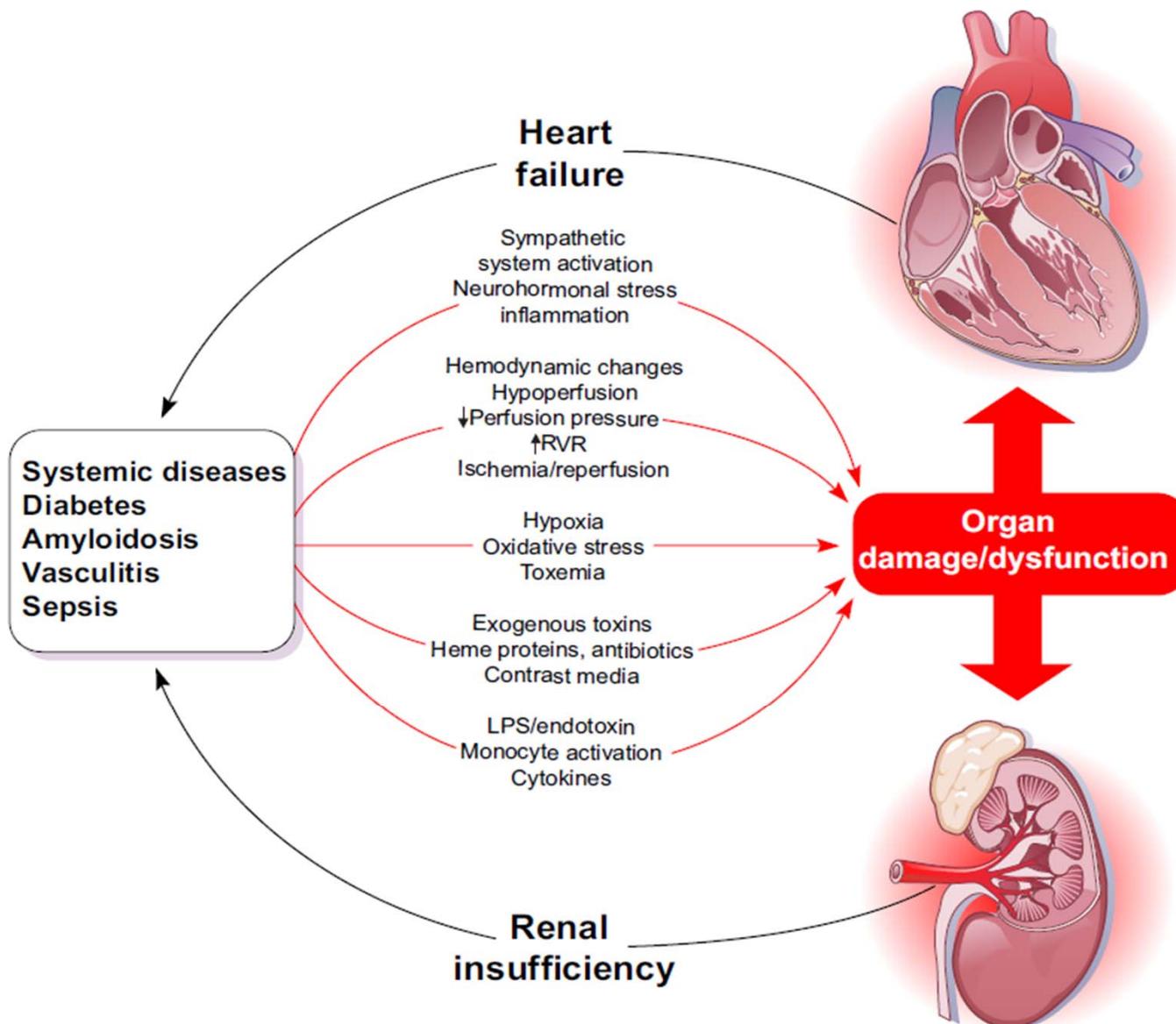
Ronco et al. J Am Coll Cardiol.  
2008;52:1527-39

# Cardiorenal syndroom type IV



Ronco et al. J Am Coll Cardiol.  
2008;52:1527-39

# Cardiorenaal syndroom type V



## CASUS 3

an, 54 jaar

opathische gedilateerde cardiomyopathie

adueel verlies nierfunctie: cardiorenaal syndroom type 2

ute achteruitgang nierfunctie, hartfalen

Cardiorenaal syndroom 3?

II, hartfalen, eindstadium nierinsufficiëntie: type 1?

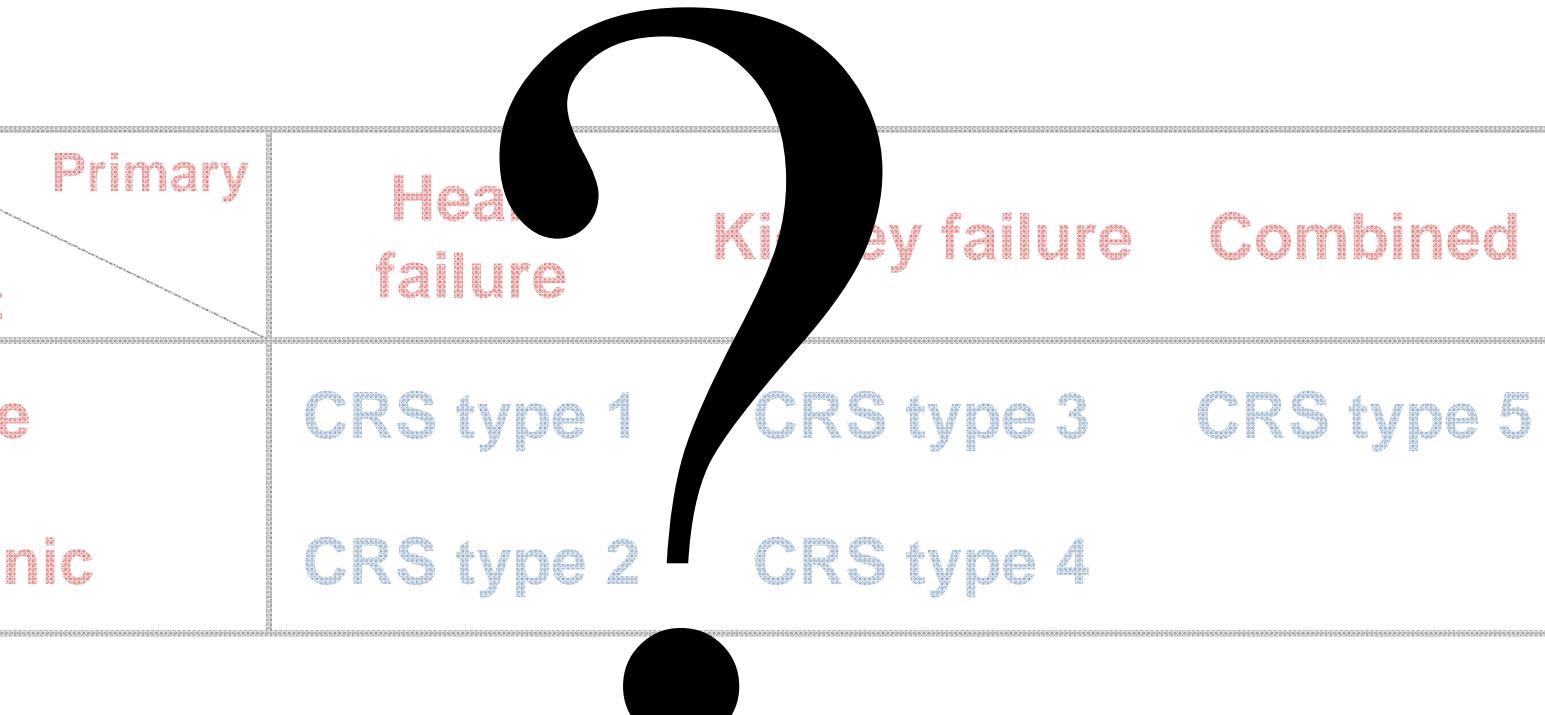
en peritoneaal dialyse

STATE-OF-THE-ART PAPER

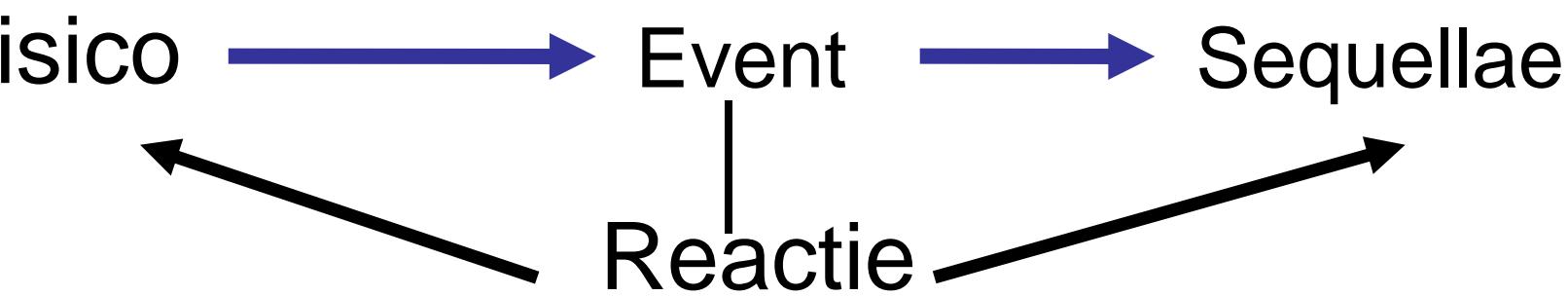
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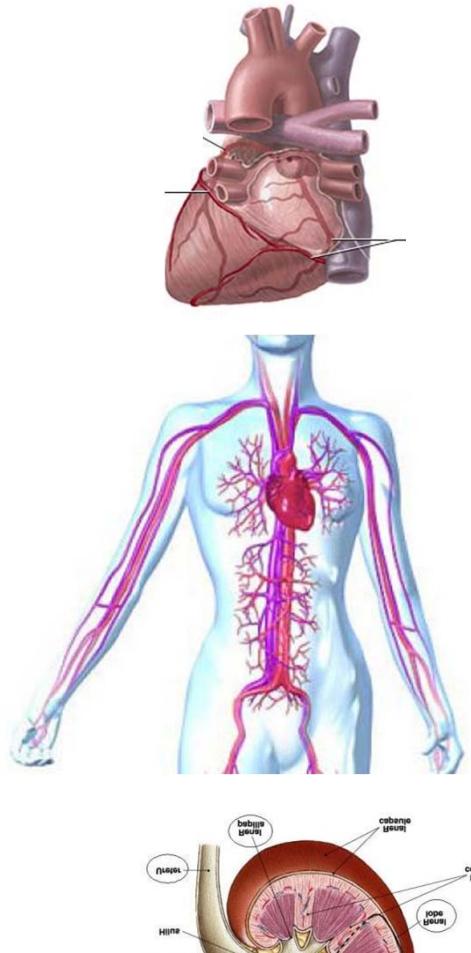


## Oorzaak - Gevolg



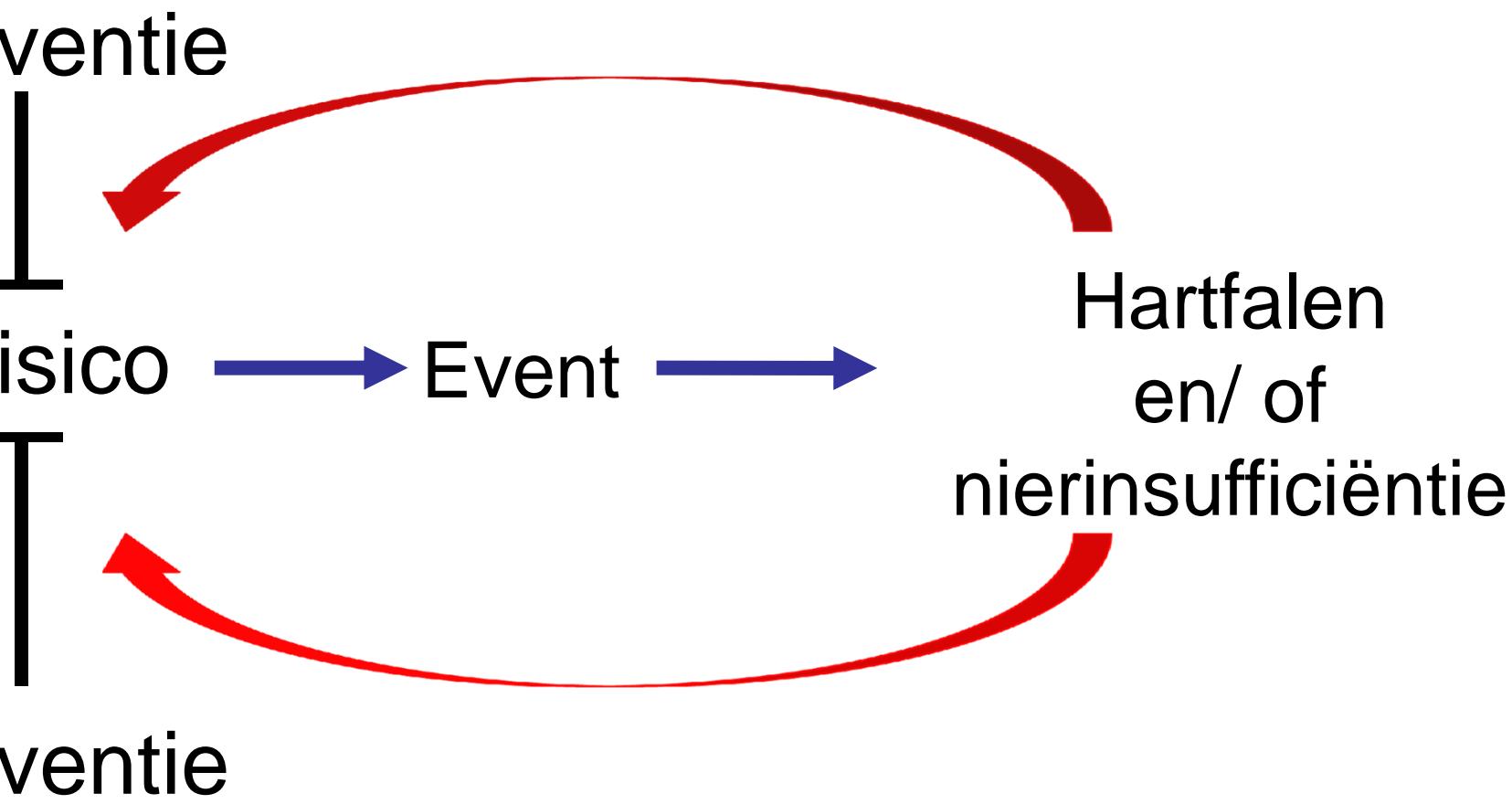
## Oorzaak - Gevolg

slacht  
ftijd  
ken  
oetes  
erlipidemie  
ertensie

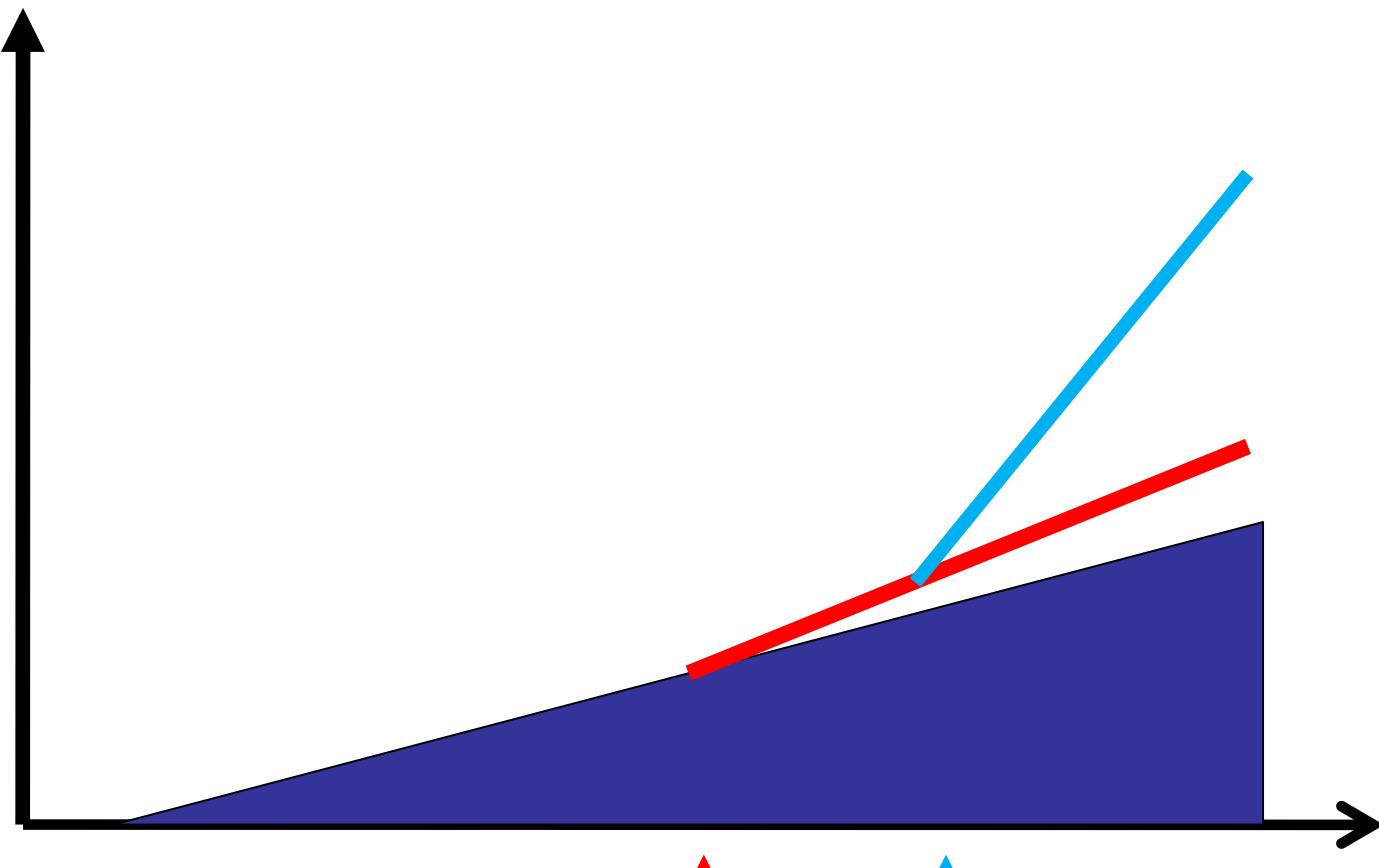


DIE  
OR  
DIALYSIS

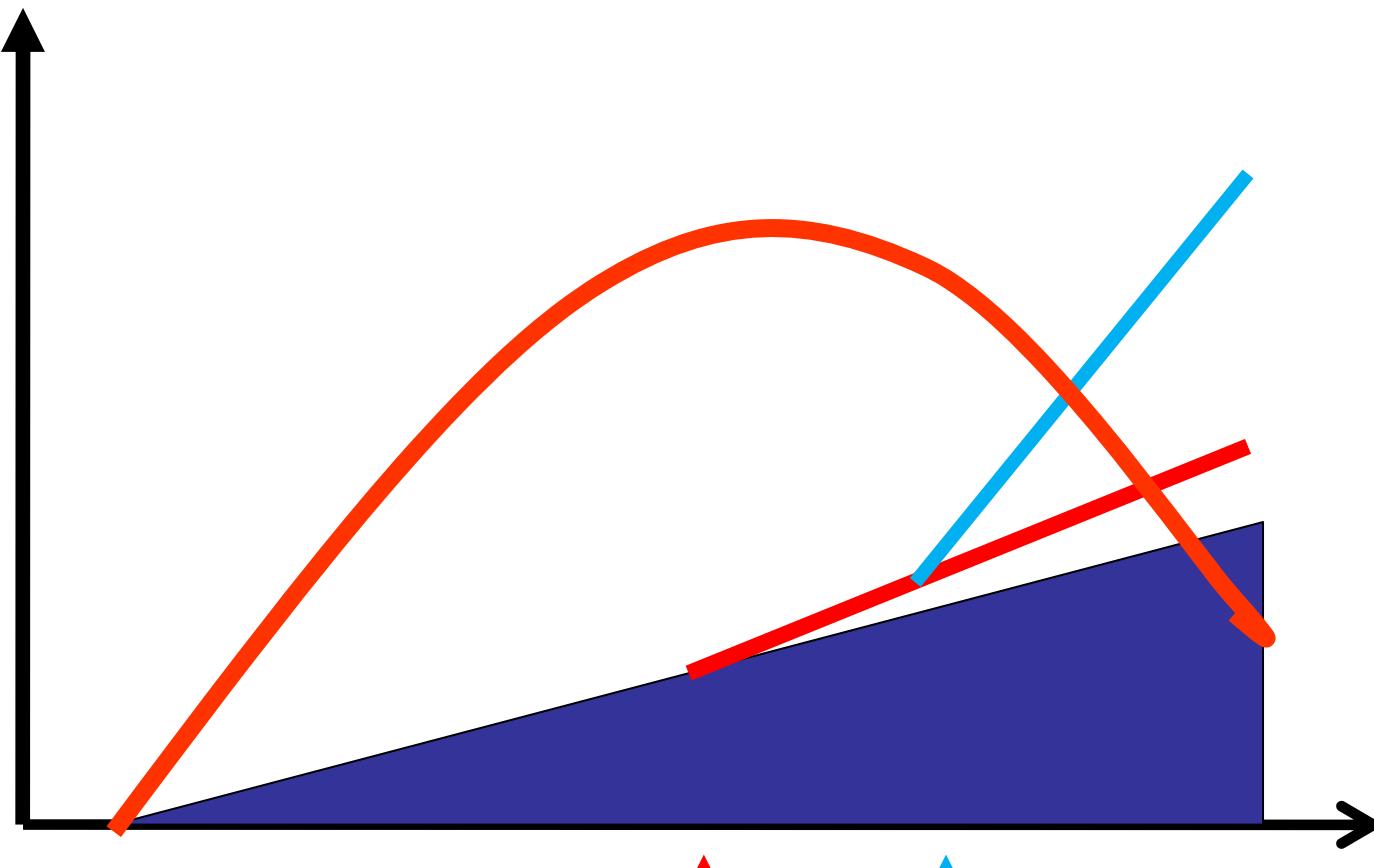
## Oorzaak - Gevolg



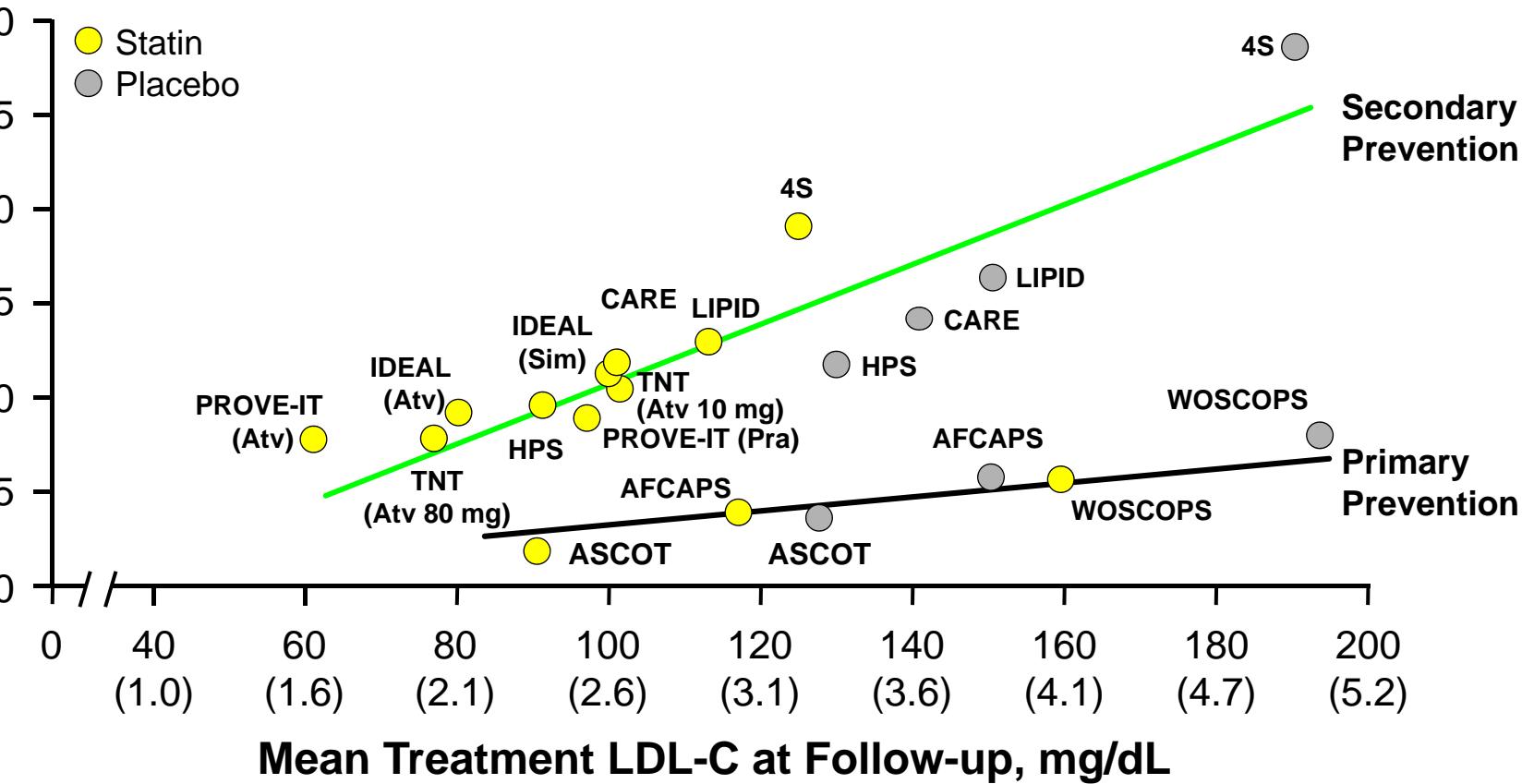
# Cumulatieve risico's



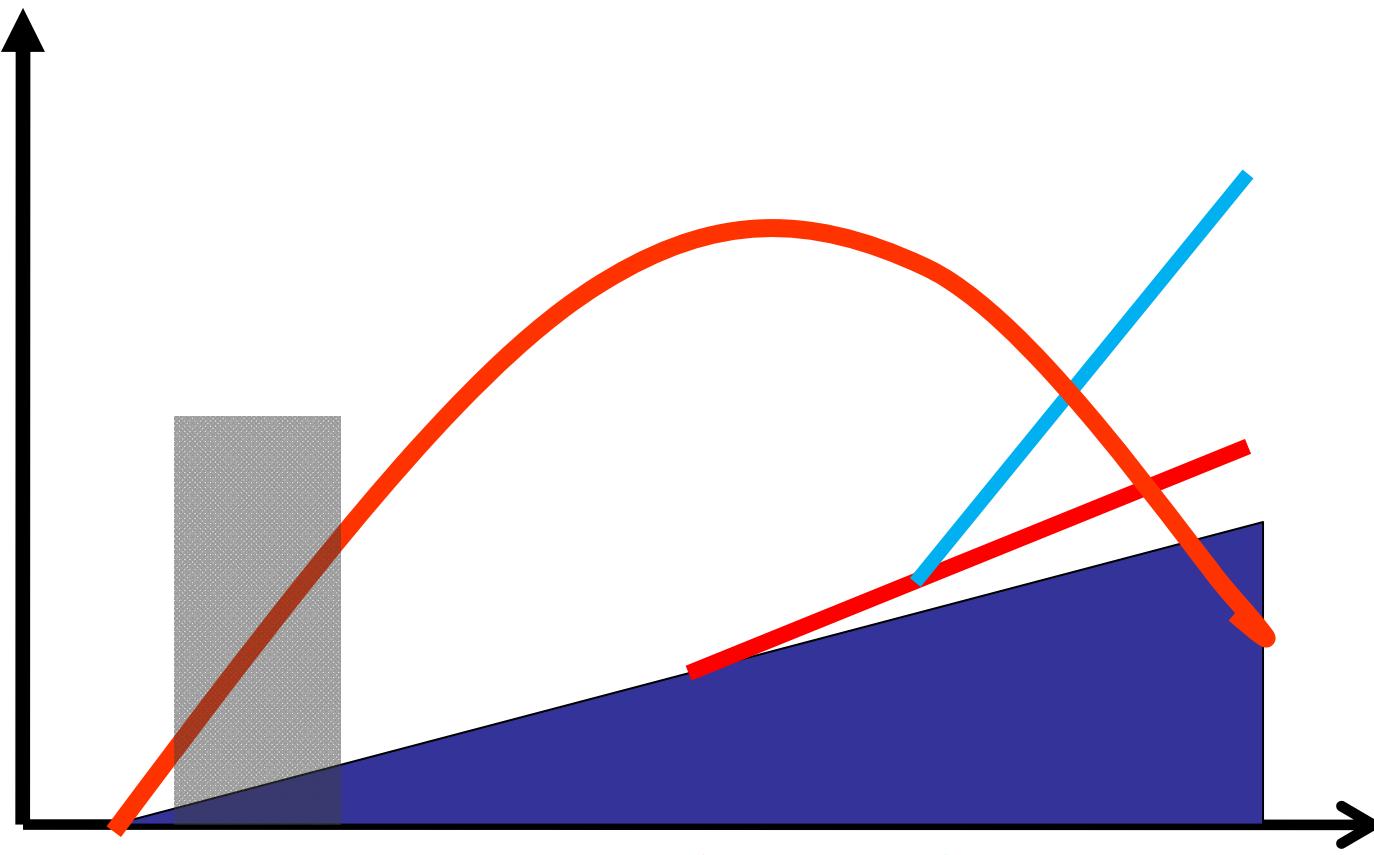
# Cumulatieve risico's en interventies



# Hyperlipidemie studies

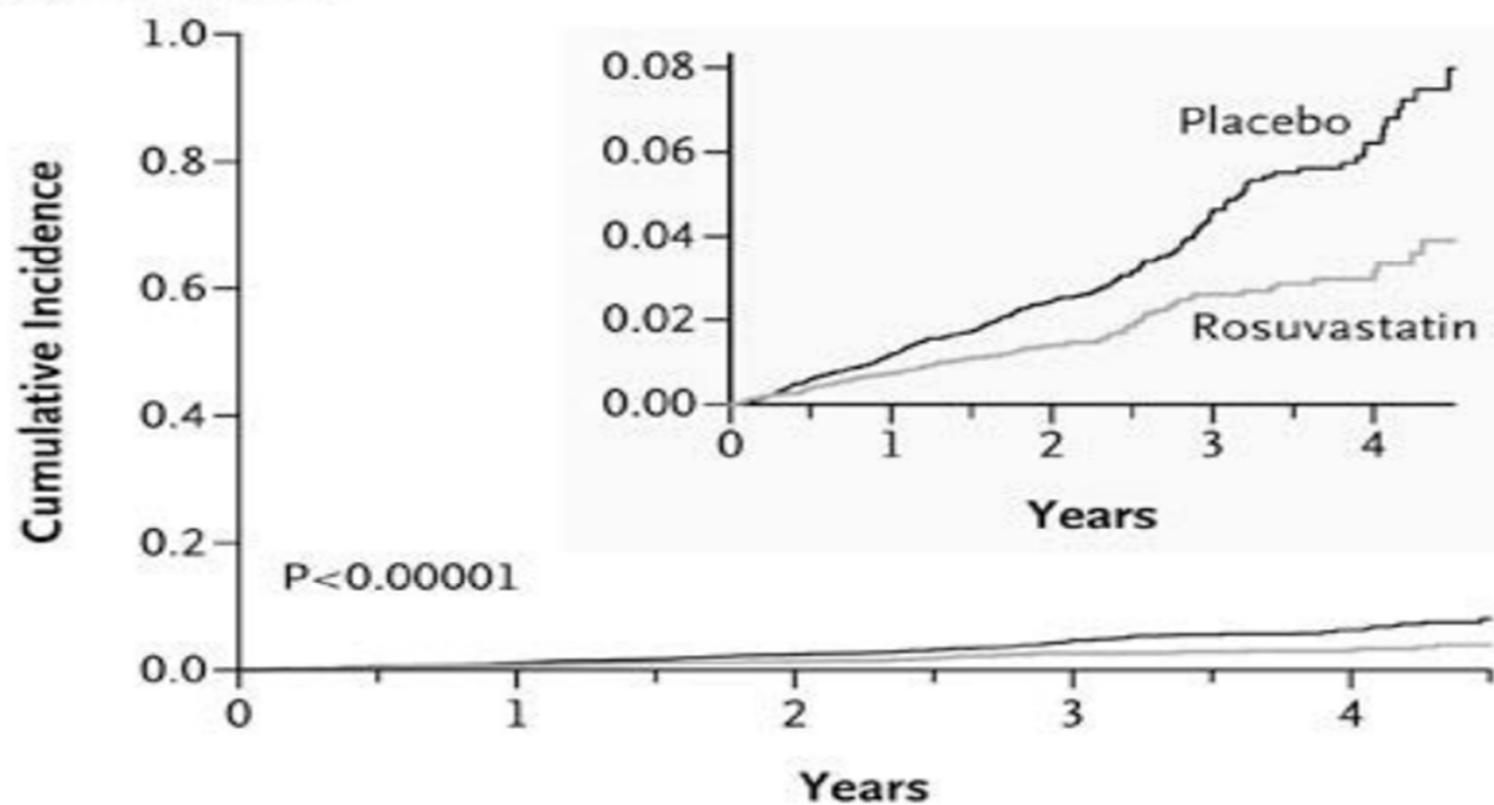


# Cumulatieve risico's en interventies



# JUPITER trial

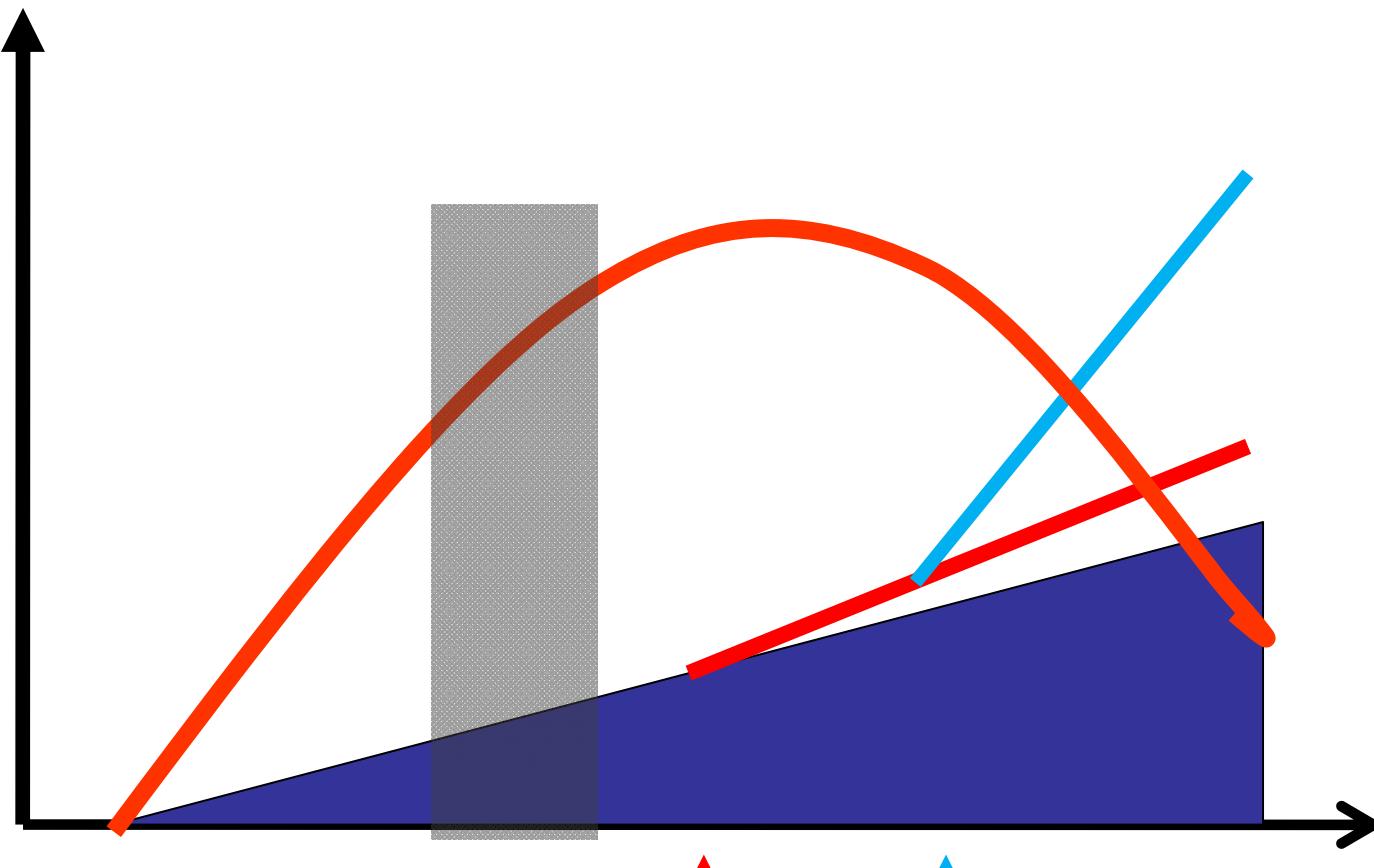
Primary End Point



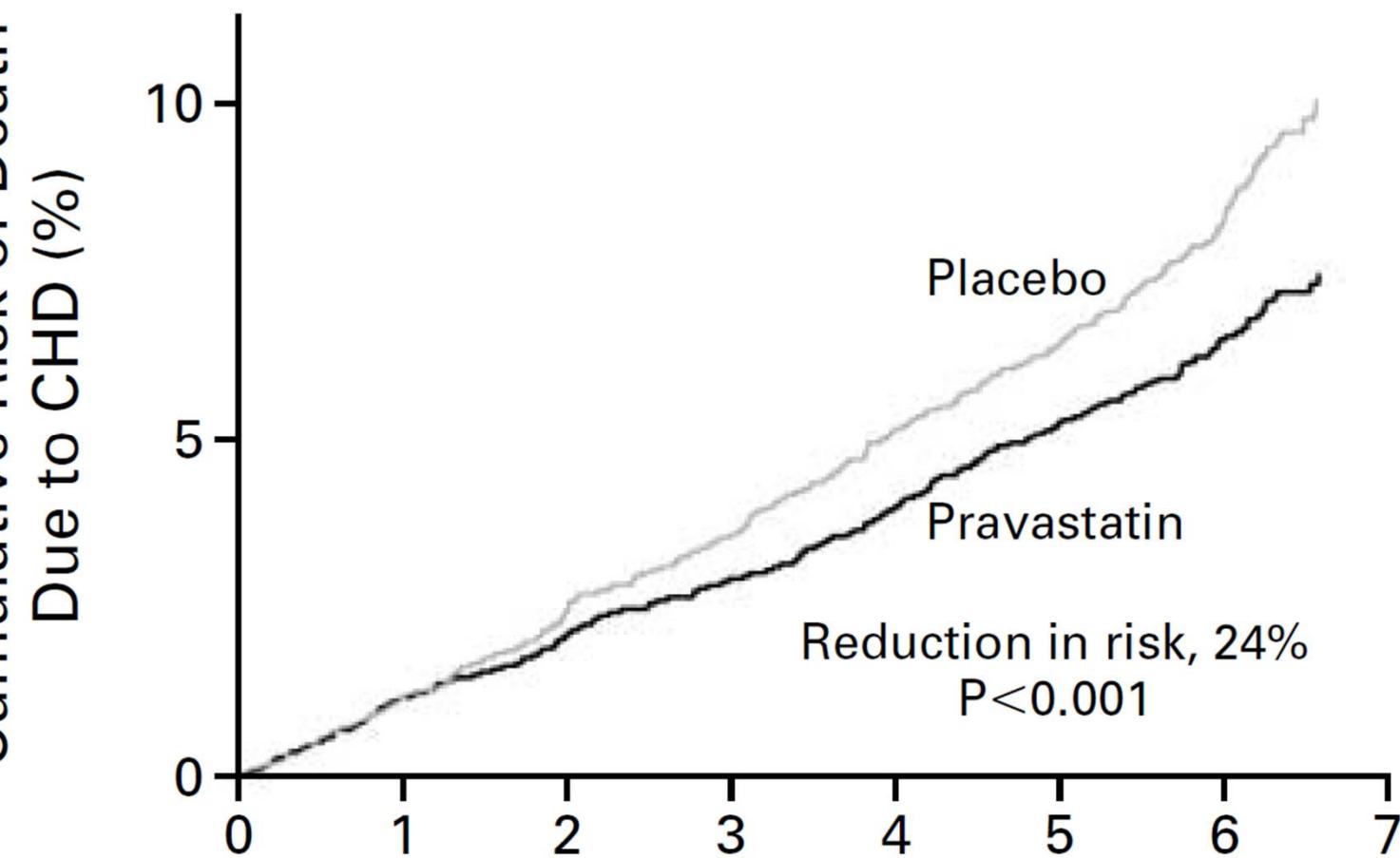
t Risk

Rosuvastatin 8001 8631 8412 6540 3803 1058 1353 983 538 157

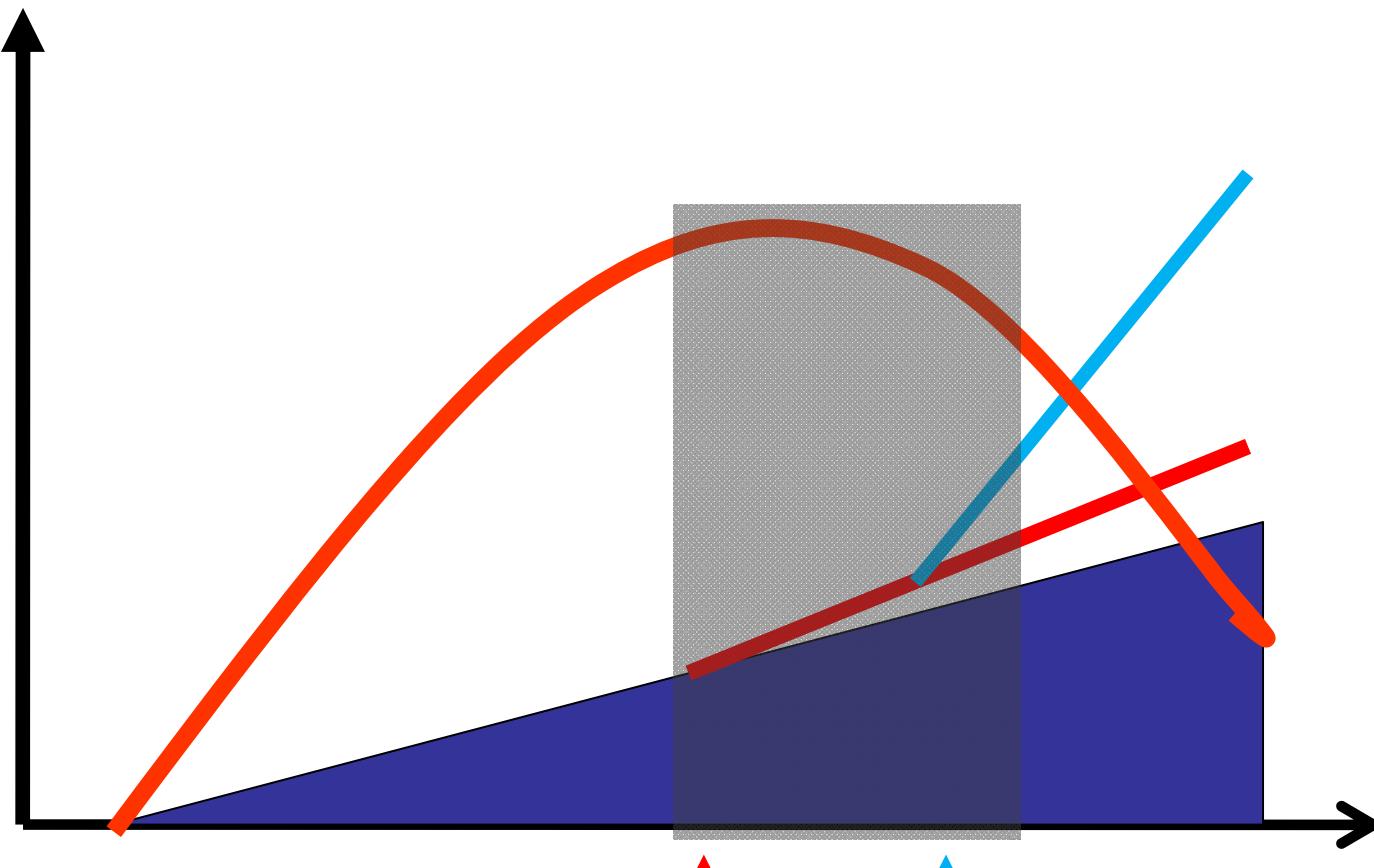
# Cumulatieve risico's en interventies



## LIPID study group



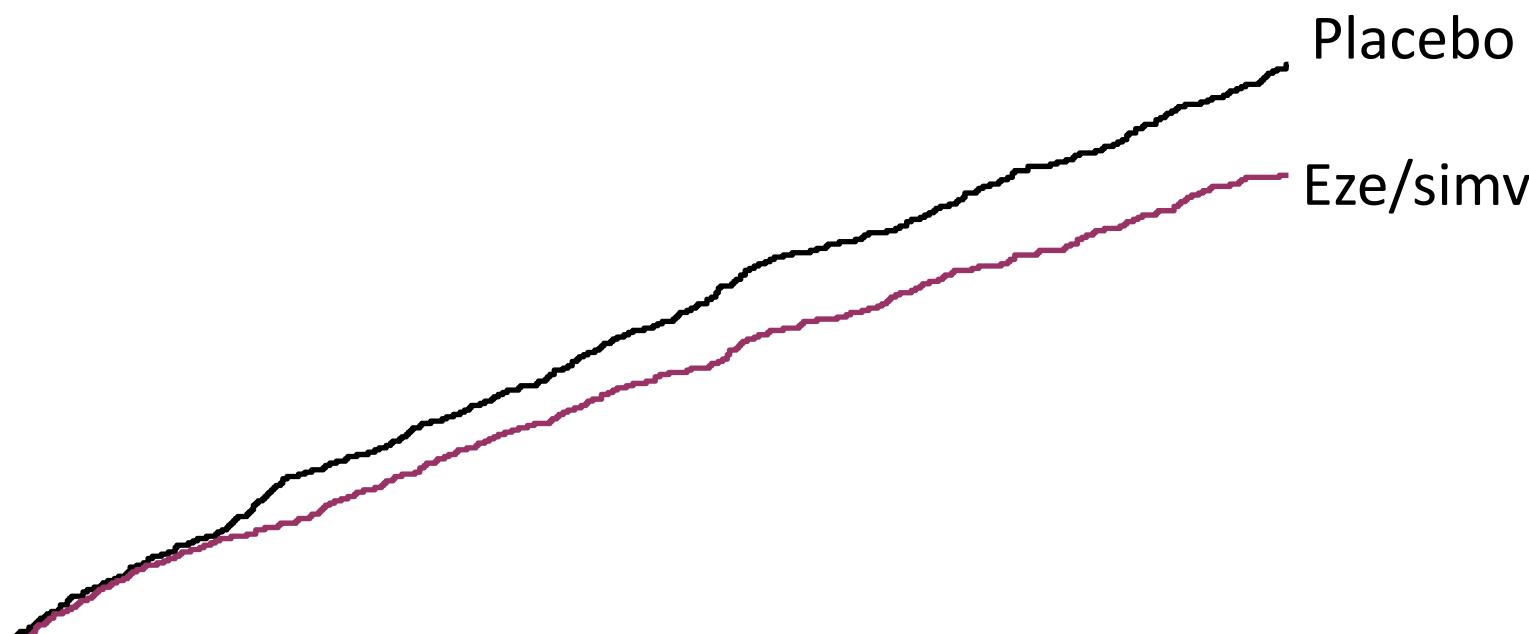
# Cumulatieve risico's en interventies



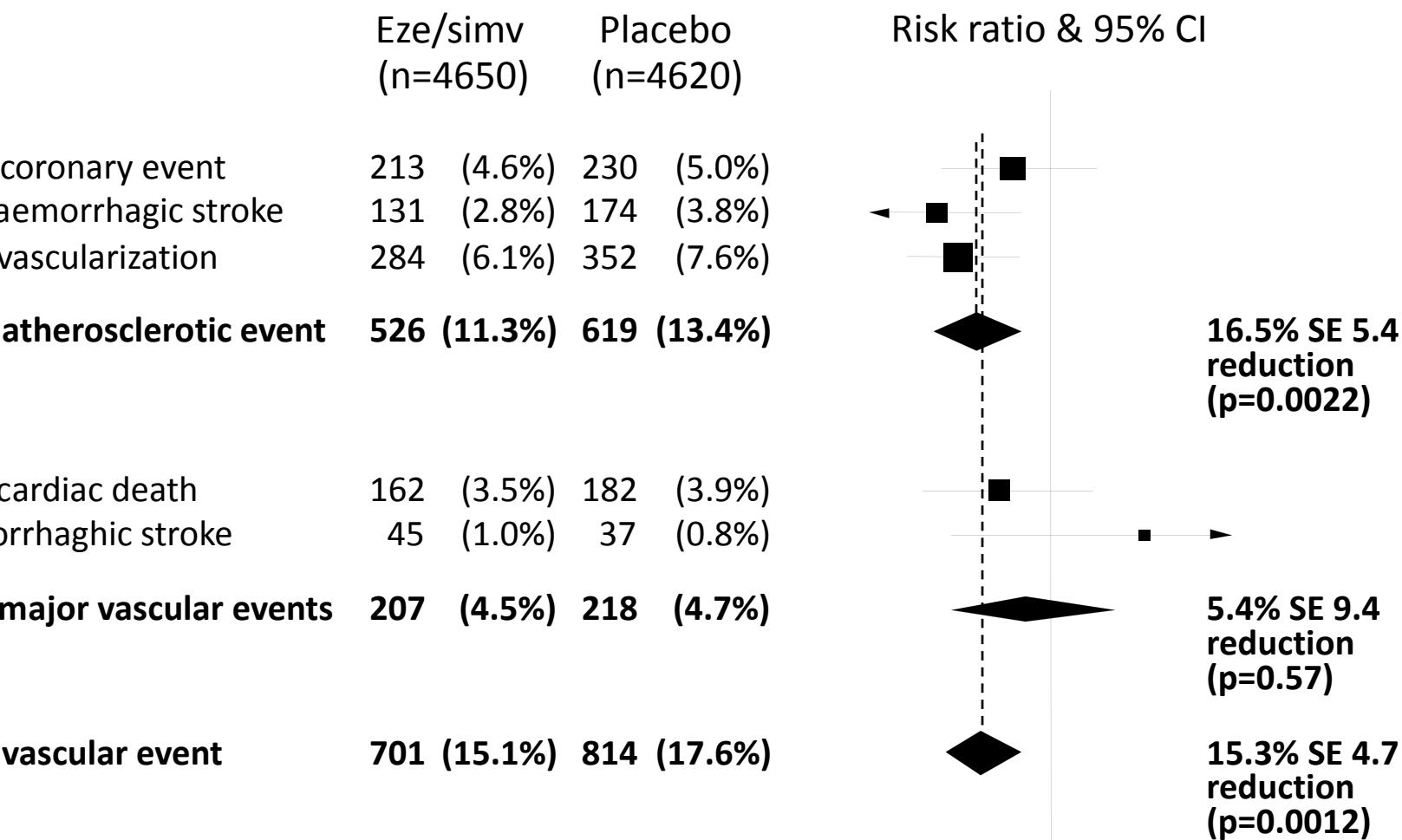
## dy on Heart and Renal Protection (SHARP)

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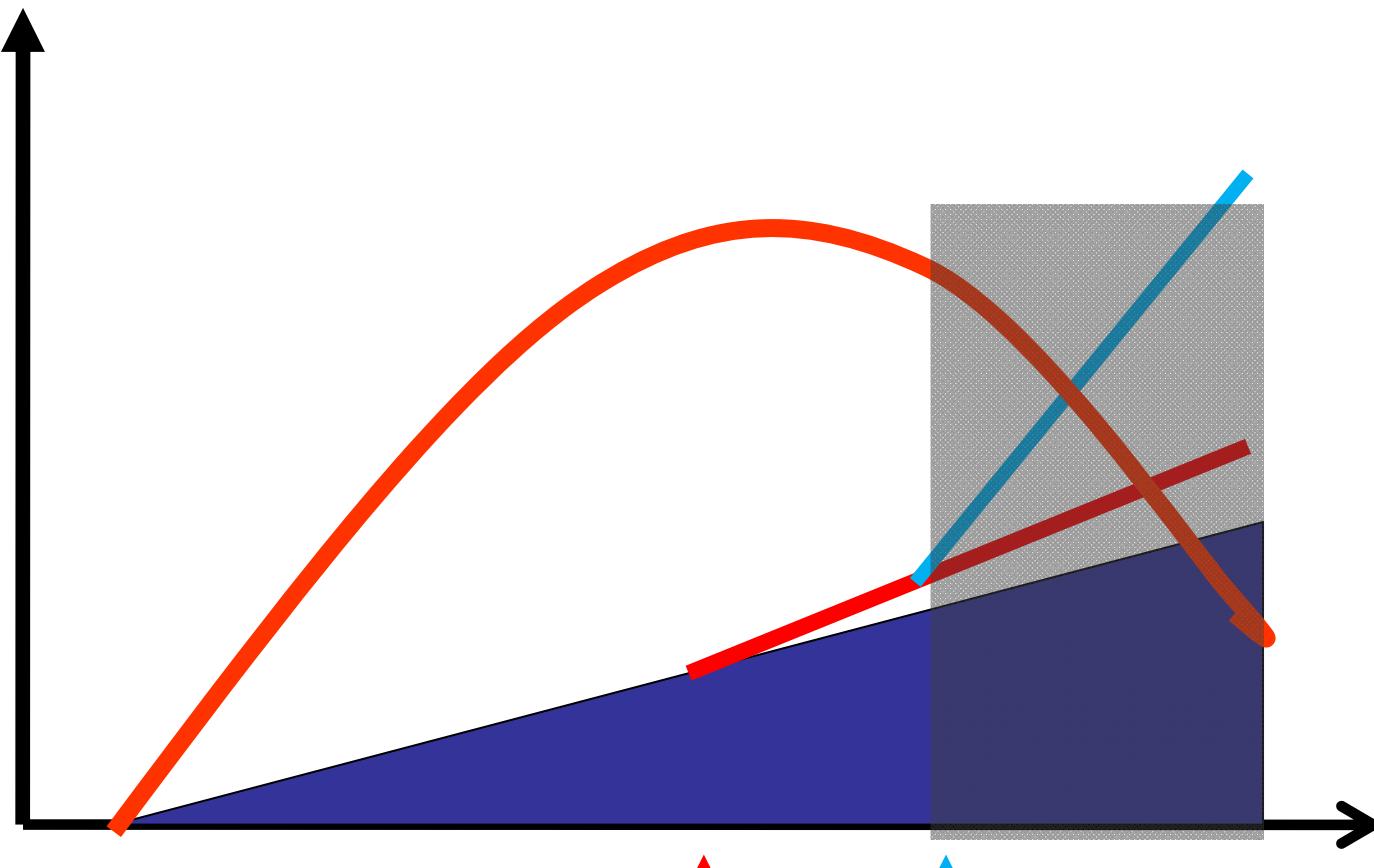
**Risk ratio 0.83 (0.74 – 0.94)  
Logrank 2P=0.0022**



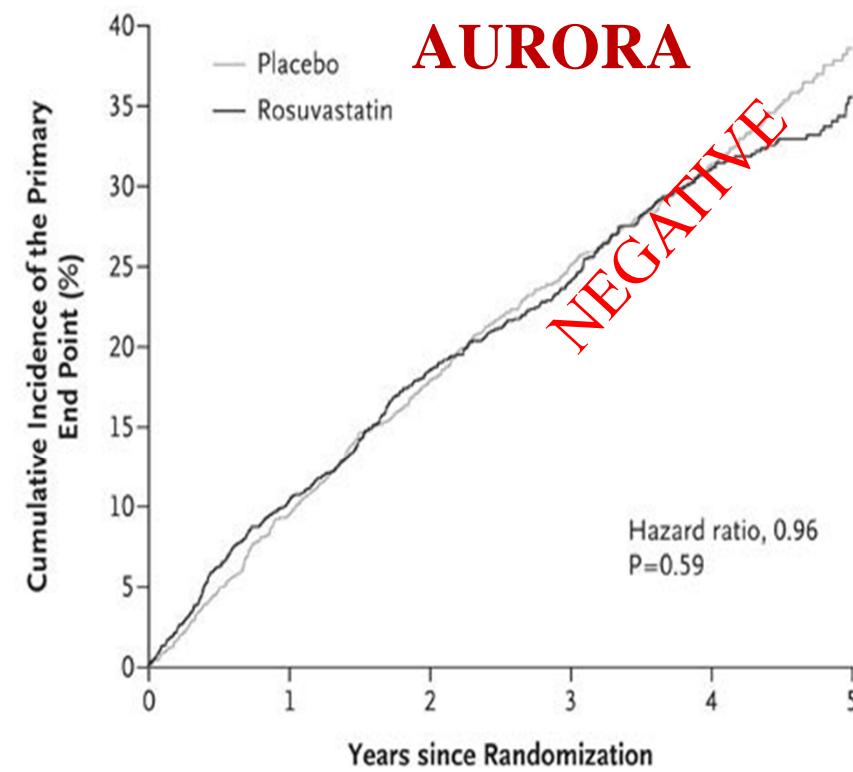
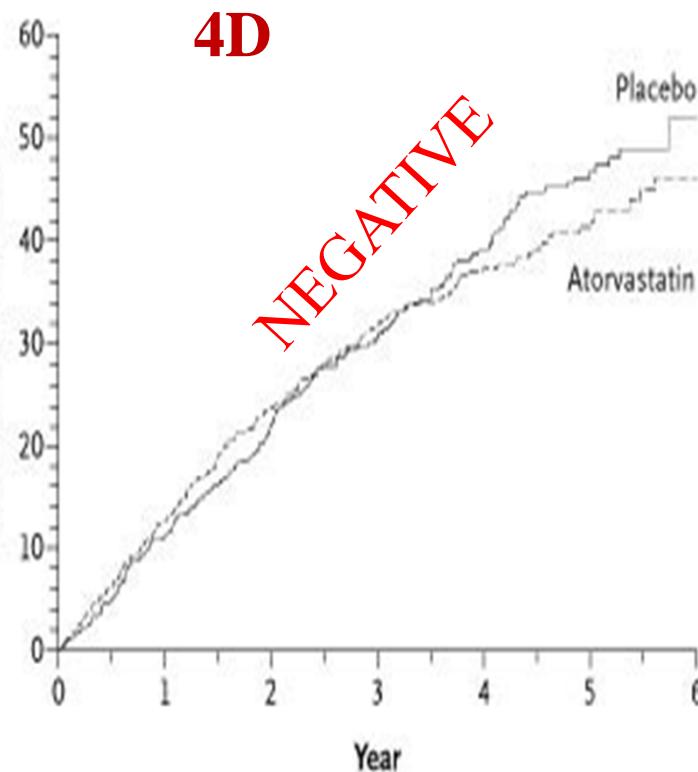
# SHARP: Major Atherosclerotic Events



# Cumulatieve risico's en interventies



# Hyperlipidemie studies in HD



No. at Risk

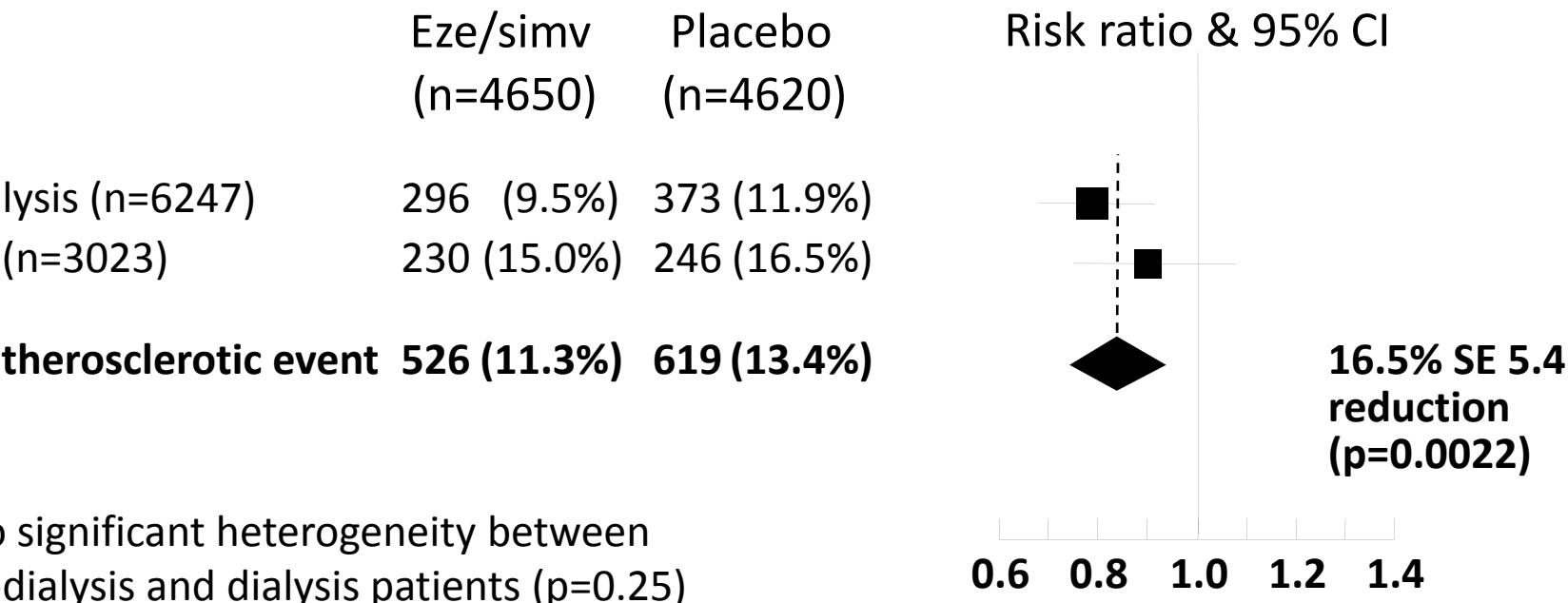
Placebo	1384	1163	952	809	534	153
Rosuvastatin	1390	1152	962	826	551	148

636	532	383	252	136	51	19
619	515	378	252	136	58	29

# Hyperlipidemie studies in HD

	4D	AURORA	SHARP
Age	66	64	62
MI (%)	100	26	22
baseline	126	100	108
n	1255	2776	9438
Inclusion	HD, DM 2, 18-80 yrs	HD, 5-80 yrs	CKD, > 40yrs
Inclusion	80>LDL-C>190 mg/dL	Statin within previous 6M	History of MI or revascularisation
Interventive	Atorvastatin 20 mg	Rosuvastatin 10 mg	Ezetimide 10 mg plus Simvastatin 20 mg
FU	4 yrs	3.8 yrs	> 4yrs
LDL decrease	-39 mg/dL (42%)	-39 mg/dL (43%)	-33 mg/dL
Drop-in (%)	15	?	8
Drop-out (%)	17	50	?
Endpoint	CV death, nonfatal MI, stroke	CV death, nonfatal MI, stroke	Major atherosclerotic events

# SHARP: Major Atherosclerotic Events by renal status at randomization

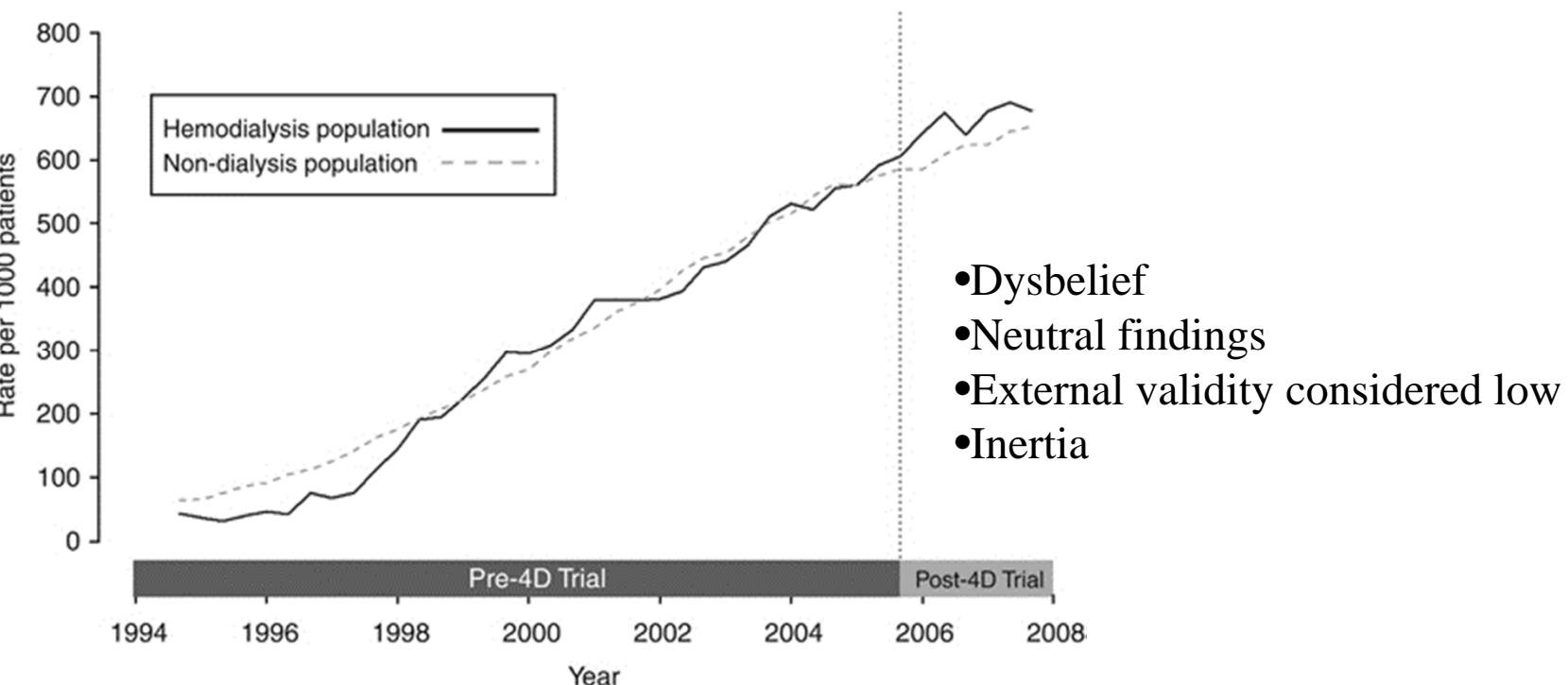


Eze/simv  
better

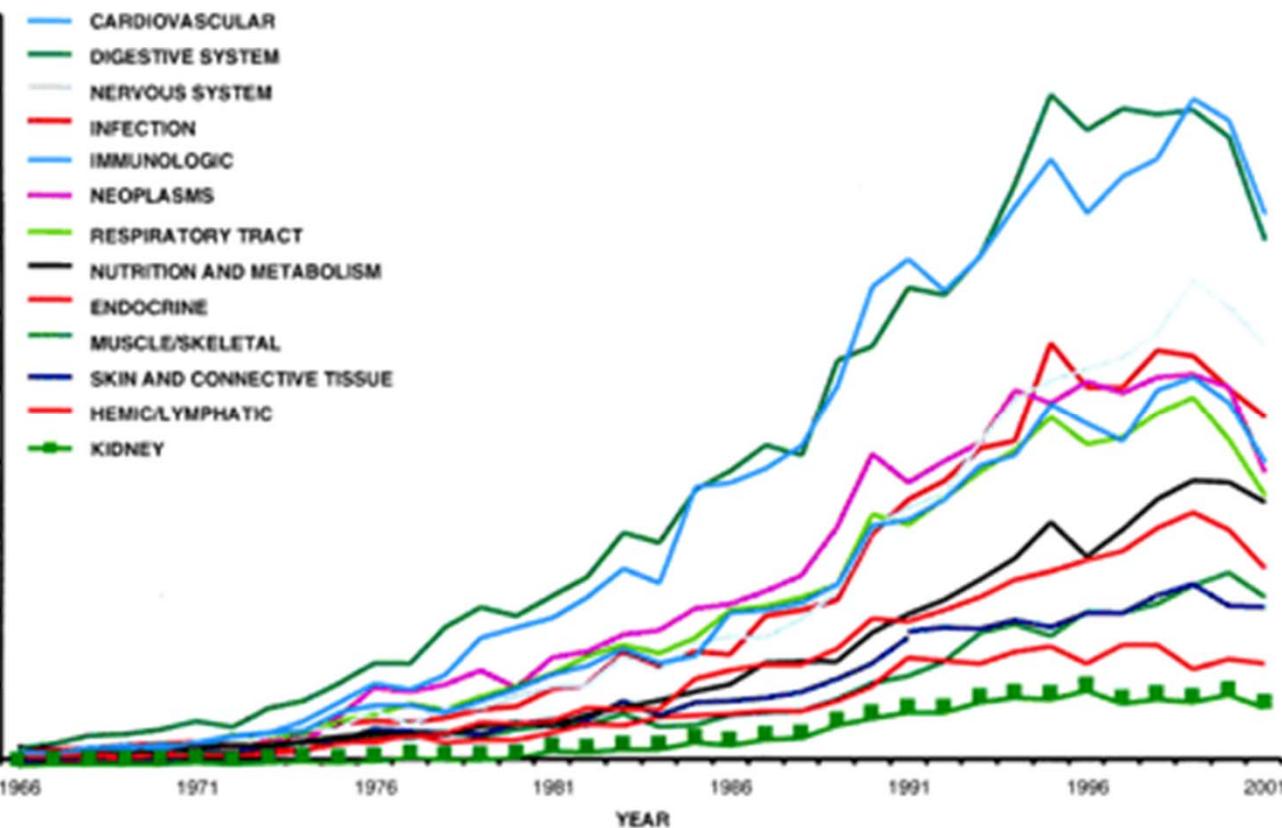
Placebo  
better

# Impact van RCTs in nefrologie

Results of a randomized controlled trial on statin use in dialysis patients had no influence on statin prescription



# wezigheid van RCTs in nefrologie



% RCT/all publications = 0.012

# Take Home messages

directionele relatie hart en nieren  
klassificaties: zin en onzin  
interactie risicofactoren voor cardiaal lijden in nierinsufficiëntie  
van ‘statines’ bij gevorderde nierinsufficiëntie  
nodzaak tot studies bij gevorderde nierinsufficiëntie  
Maar....

- Welke pathofysiologische aangrijppingspunten?
- Wie behandelen?
- Hoe screenen naar CV lijden in dialyse populatie?